The RUBBER AGE

February, 1943

DISPERSED TYSONITE

Dispersed TYSONITE is being used in many places where latex and dispersed reclaim have been used. It is moderately stable and can be coagulated and the same precautions used for rubber dispersions should be followed in handling. It may be compounded with various materials to produce different properties and characteristics.

DISPERSED TYSONITE

is suggested for:

Upholstery and rug backing

Coating of paper and fabric

Saturation of paper & other fibers

Dispersed TYSONITE is shipped in 55-gallon drums. Samples & technical assistance available.

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

Newsletter No. 2 *PUBLISHED BY RUBBER CHEMICALS DIVISION OF* DU PONT *FEB., 1943*

Neoprene Latex Makes Better Products — Helps Conserve Rubber

THERE ARE THREE REASONS why rubber chemists interested in contributing to the rubber conservation program should promptly investigate the use of neoprene latex.

1. Any product that can be made from rubber latex can be made from neoprene latex.

2. The resultant neoprene products are uniformly superior in resistance to the effects of oils, chemicals, heat, sunlight, ozone and aging.

3. A substantial increase has been made in the production capacity for neoprene latex to take care of an expected increase in demand. This additional production may be used for those applications approved by the War Production Board.

MANUFACTURING PROCESSES SIMILAR—Neoprene latex can be used in plants designed for rubber latex with only minor modifications in plant or process. Basically the processes for rubber and neoprene are identical. The adjustments necessary are individual plant problems, and will vary with the existing equipment, plant layout and the product being made. A detailed discussion of advisable process modifications would be of little value, but the data given below may be helpful in determining the nature of the changes which may be necessary or advisable.

A comparison of the major processing steps employed in the manufacture of a product made from rubber and neoprene latices is given below.

TEST COMPOUNDS		
	Rubber	Neoprene
Rubber from 60% centrifuged latex	100	—
Neoprene from Type 571 latex	—	100
Zinc Oxide	2	3
Sulfur	1.5	—
Neozone D—Dist.	2	2
Tepidone	1	—
Casein	0.25	0.25
Aquarex D	0.25	0.25

PROCESSING—Films and articles may be made from either formulation by coagulating dip, straight dip, molding, spraying, spreading, impregnating, or extruding. Both require protection from freezing, acids, and salts.

DRYING TIME—Rubber films dry faster than do those of neoprene. The rubber film described by the recipe requires two hours drying time at 158°F. The neoprene film requires 4 hours at 158°F.

VULCANIZING—In general rubber latex films cure somewhat faster than do neoprene films. For example, the cure time required to secure optimum physical properties for the rubber vulcanizate is 20 min. at 212°F—for the neoprene compound 30 min. at 284°F. Neoprene films must be cured after drying since neoprene latex does not lend itself to pre-curing in the wet state.

PRODUCT SUPERIORITY PROVED BY TEST—The greater stability of neoprene latex products has been shown by laboratory test and proved by industrial applications made over the past ten years. Physical tests on the vulcanizates of test formulas show the superior stability of the neoprene compound.

TEST COMPOUNDS		
	Rubber	Neoprene
Gauge	0.03	0.03
Stress—500%	825	600
T_b p.s.i	5300	3900
E_b %	800	900
Permanent Set	3	4
Aged in oxy. bomb 21 days—T_b	3000	3800
—E_b	700	850
% T_b Retained	60	99
Immersed in kerosene 24 hrs. @ 82°F. T_b	disintegrated	2000
Aged in direct sunlight 30 days south. N. J. T_b	Too weak to test	3500
% T_b Retained	0	90

We believe that a thorough investigation of neoprene latex at the present time will prove of value to all manufacturers of latex goods. The necessity of conserving natural rubber is well known. Neoprene latex will be invaluable as a direct substitution and will prove of even greater value in that its use extends the life of products made of it and thus reduces need for replacement. Start now so that you will be in position to utilize the increasing supplies of neoprene latex.

LATEX BULLETIN AVAILABLE—Neoprene Latex Type 571, its properties, handling, compounding and processing are discussed in a new bulletin just received from the printer. The bulletin gives sufficient information to enable latex technicians to develop mixes suitable for the production of practically all articles normally made from natural rubber latex. The bulletin will be sent to any rubber company technician requesting it on company letterhead.

Through the Mill

THE PROPERTIES OF DU PONT RUBBER CHEMICALS *is the title of a new booklet which gives pertinent information on all of our chemicals currently being offered the trade. This booklet, a must for every rubber man, is now being distributed. If you are a member of the rubber industry and can use our chemicals in your work, we'll be pleased to send you a copy.*

A CRITICAL SITUATION *exists in regard to the supply of metal containers. This shortage makes it necessary that we have returned to us the empty metal drums in which our liquid products are shipped. We will pay the freight or truck transportation charges from your factory to our producing plant and we will credit you at the ceiling price for those containers returned to us in usable condition. In order to facilitate the cleaning of the drums at our plant, will you kindly wash them out with water promptly after the contents are removed and replace securely the bungs or lids to prevent contamination in storage and during shipment. Your cooperation in this effort to salvage these empty containers will make it possible for us to continue to supply you with those products which must be shipped in metal drums.*

JACKET STOCKS FOR WIRI *insulation which have excellent processing properties are described in a new report now being distributed. The report also contains comments for increasing the speed of cure of Buna S and neoprene.*

THE PREVENTION OF FUNGUS GROWTH *on rubber and neoprene coated fabrics is covered by a recent investigation which has led to recommendations which merit the attention of the compounder.*

RUBBER CHEMICALS DIVISION

Wilmington DU PONT *Delaware*

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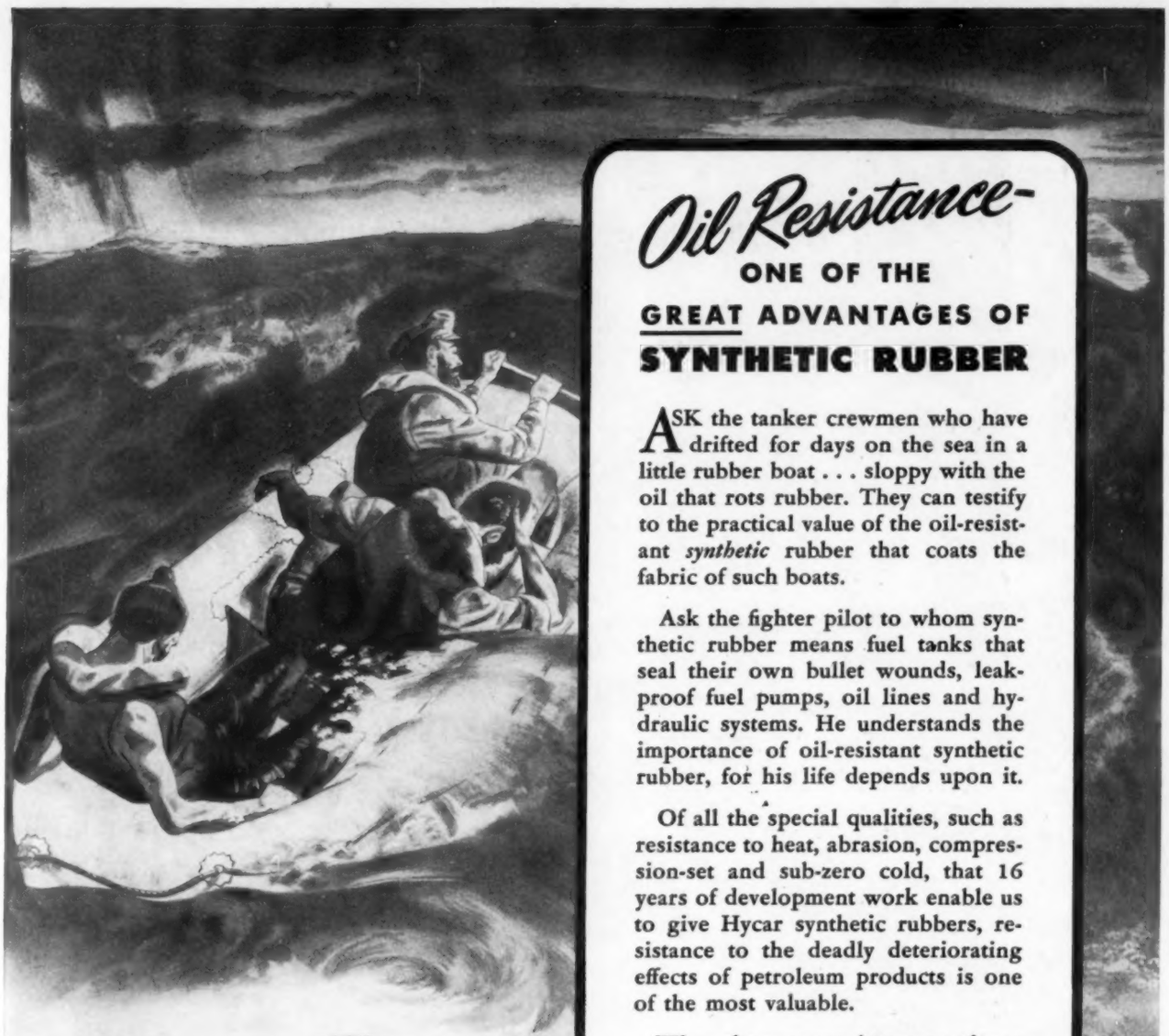


Oil Resistance—

ONE OF THE GREAT ADVANTAGES OF SYNTHETIC RUBBER

ASK the tanker crewmen who have drifted for days on the sea in a little rubber boat . . . sloppy with the oil that rots rubber. They can testify to the practical value of the oil-resistant *synthetic* rubber that coats the fabric of such boats.

Ask the fighter pilot to whom synthetic rubber means fuel tanks that seal their own bullet wounds, leakproof fuel pumps, oil lines and hydraulic systems. He understands the importance of oil-resistant synthetic rubber, for his life depends upon it.

Of all the special qualities, such as resistance to heat, abrasion, compression-set and sub-zero cold, that 16 years of development work enable us to give Hycar synthetic rubbers, resistance to the deadly deteriorating effects of petroleum products is one of the most valuable.

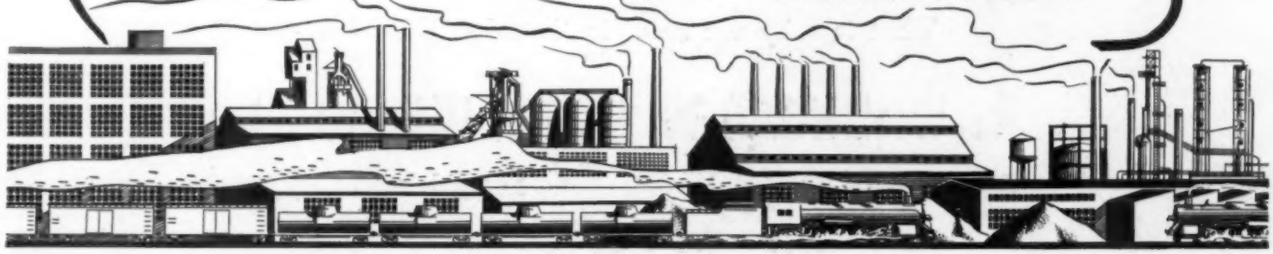
When the vast requirements of war have been met, manufacturers in every industry will have available a truly All-American rubber, versatile, far more useful and longer-lived than tree rubber ever was; a rubber that's laboratory controlled and tailor-made to meet a thousand different individual needs. *Hycar Chemical Co., Akron, Ohio.*

Available Now for Experimental Work

Although the entire output of Hycar is allocated by the War Production Board, government regulations permit us to sell up to 200 pounds of Hycar per month to customers doing experimental work. Hycar maintains a fully staffed and equipped Customer Service Laboratory to help your supplier of rubber products develop products for you of Hycar synthetic rubber.

HYCAR

SYNTHETIC RUBBER



BOTTLENECKS-BLESS THEM

Ever since America started out to become the Arsenal of Democracy, Industry has been apologizing for its Bottlenecks. Columnists and orators have made them the symbols of delay and obstruction.

● It is time that someone spoke a word in their defense, for Bottlenecks have been serving us all ever since the early days when glass blowers first shaped them small enough so that they could be closed by stoppers.

We have been making rubber stoppers for Bottlenecks for half a century and we know something of the accomplishments in which they have had a part. We know that today, more than ever, they are the passageways to discoveries that will bring safety, security, health and prosperity to our people.

● And so we offer this tribute to these modest helpers of scientific progress, so that their usefulness will continue to be appreciated.

That is why we say, Bottlenecks, Bless Them.

Manufacturers of Laboratory Stoppers of Rubber and of Neoprene. Name of Nearest Dealer Sent on Request.

R. W. RHOADES METALINE CO., Inc.

50-17 Fifth St. **Long Island City, N. Y.**

Inquiries Are Solicited for the Manufacture of Small Moulded, Rubber and Neoprene Products for War Orders.

NAFTOLEN*

*REG. U. S. PAT. OFFICE

An unsaturated and reactive hydrocarbon for synthetic and natural rubber. Functions as a vulcanizable plasticizer, tackifier, dispersing agent, and extender.

REG. U. S. PAT. OFFICE

WILMINGTON CHEMICAL CORPORATION

10 East 40th Street · New York, N. Y.

Plant and Laboratory: Wilmington, Delaware

RE YOU FAMILIAR WITH THE *advantages* OF LINERETTE?

LINERETTE is ideally suited for use with lightweight, frictioned stocks. It is not offered as a substitute for Holland cloth; yet we have reason to believe Linerette has been used successfully for a period of years where Hollands were formerly used, including various gum stock operations.

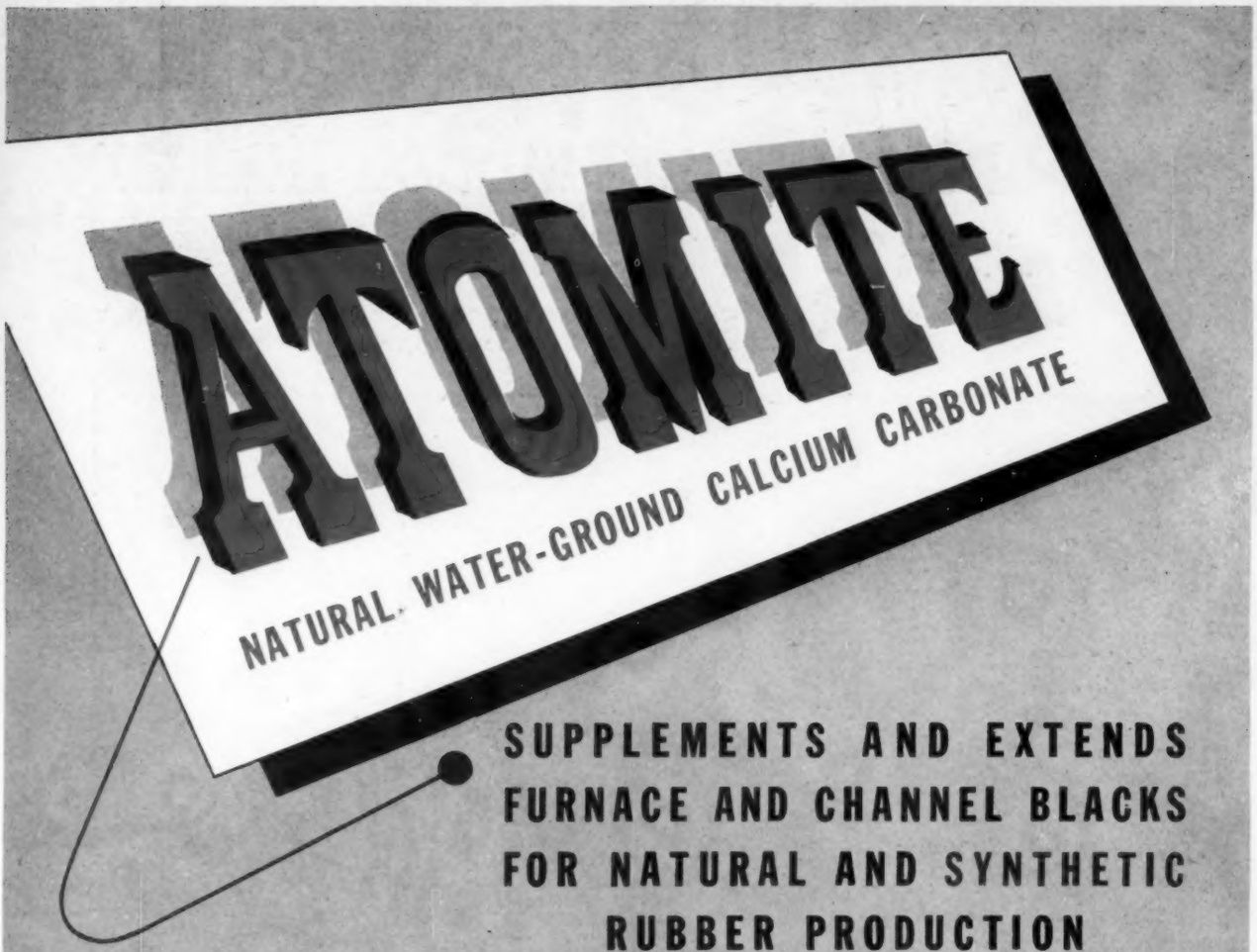
Linerette preserves the tackiness of the stock because it contains no oil or wax that migrate into the stock. Introduced in 1925, Linerette is thoroughly tried and proven. It is a specification sheet, made to rigid standards of quality.

These important advantages, plus the fact that it is plentiful and low in price, account for the steadily increasing popularity of Linerette. *You* should investigate Linerette *now*. Write for samples, specifying width desired.

THE CLEVELAND LINER & MFG. CO.
CLEVELAND, OHIO

LINERETTE
is made by the manufacturers of
CLIMCO
PROCESSED LINERS

LINERETTE
INTERLEAVING PAPER



SUPPLEMENTS AND EXTENDS FURNACE AND CHANNEL BLACKS FOR NATURAL AND SYNTHETIC RUBBER PRODUCTION

Atomite is the new, "tailor-made" extender for natural and synthetic rubber. It is unexcelled for its combination of purity, uniformity and fineness.

In addition to conserving war-precious rubber and pigments, Atomite helps to step up production efficiency and lower production cost. You are assured a constant source of supply, for Atomite is a *non-critical* material.

USE ATOMITE:

1. TO SUPPLEMENT AND EXTEND FURNACE AND CHANNEL BLACKS.
2. TO REPLACE COARSE FILLERS.
3. TO REPLACE HEAVIER PIGMENTS AND REDUCE VOLUME COST.
4. TO IMPROVE PROCESSING.
5. TO REDUCE SCRAP.
6. TO RELIEVE THE SHORTAGE OF SOFT BLACKS.

LARGE SUPPLIES OF ATOMITE AVAILABLE IMMEDIATELY

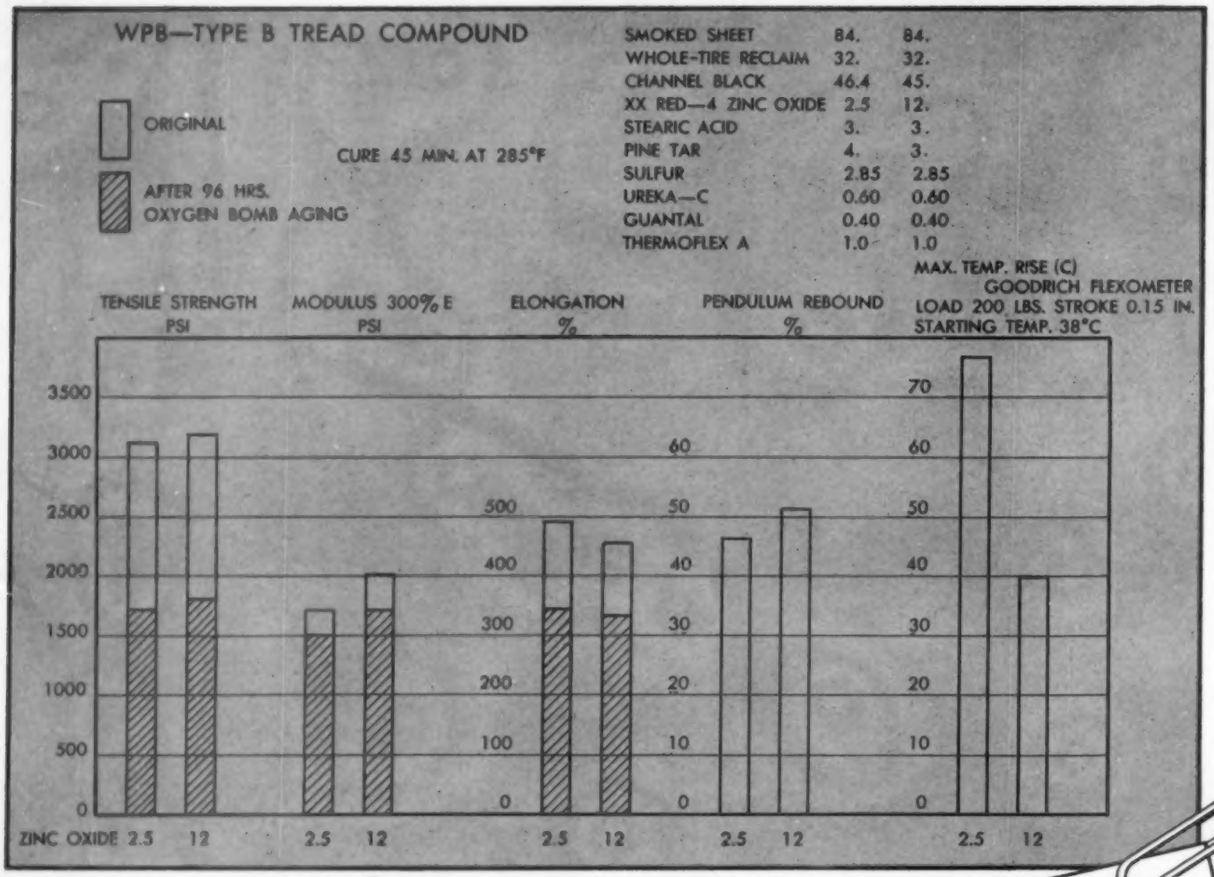
TRIAL LOTS SENT PROMPTLY

THOMPSON, WEINMAN & CO., Inc. 52 VANDERBILT AVE., NEW YORK CITY

Plants: Cartersville, Ga. • McIntyre, Ga. • Sparta, Tenn. • Florence, Vt. • Bloomington, Ind. • Norristown, Pa. • Waltham, Mass.
Research Laboratory: Cambridge, Mass.

Increasing Zinc Oxide in Compounds Containing Reclaimed Rubber

Results in HIGHER RESILIENCE *and* LOWER HEAT GENERATION



In a previous announcement, the effects of increasing *zinc oxide* in compounds made up with *All-Reclaimed* Rubber were shown to include higher physical properties—especially modulus and tear resistance—and improved processing.

Increased zinc oxide is also beneficial in compounds where Whole-Tire Reclaim only partially replaces Crude Rubber. In a Type B Tread Compound, increasing the zinc oxide from 2.5 to 12 parts by weight increases the modulus and pendulum rebound appreciably, and shows a marked improvement in heat generating characteristics as determined by the Goodrich Flexometer.

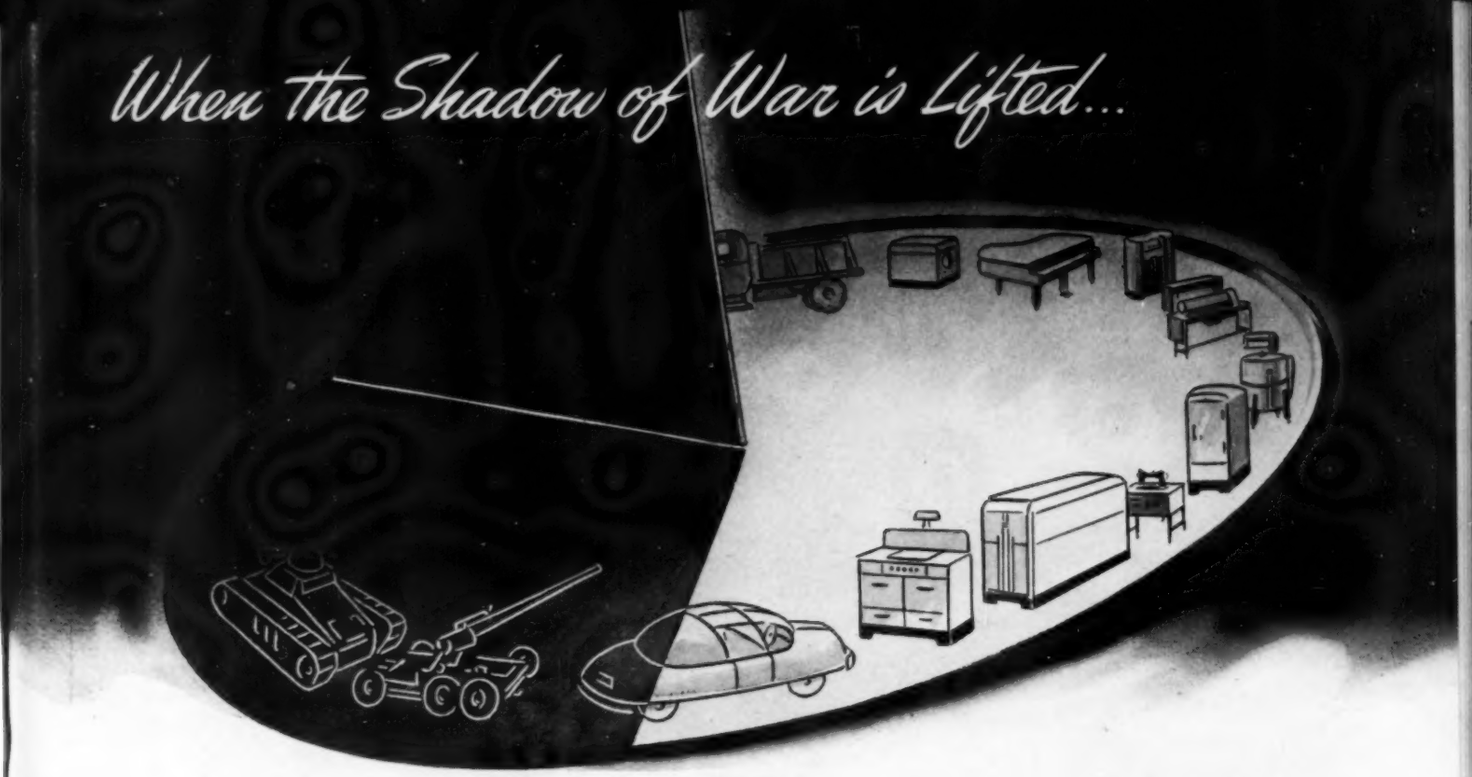
AMERICAN PROCESS (MADE FROM ORE) ZINC OXIDES ARE NOW READILY AVAILABLE

New Jersey zinc

THE NEW JERSEY ZINC COMPANY • 160 FRONT STREET, NEW YORK

UNIFORM QUALITY ZINC OXIDES . . THE HORSE HEAD BRANDS

When the Shadow of War is Lifted...

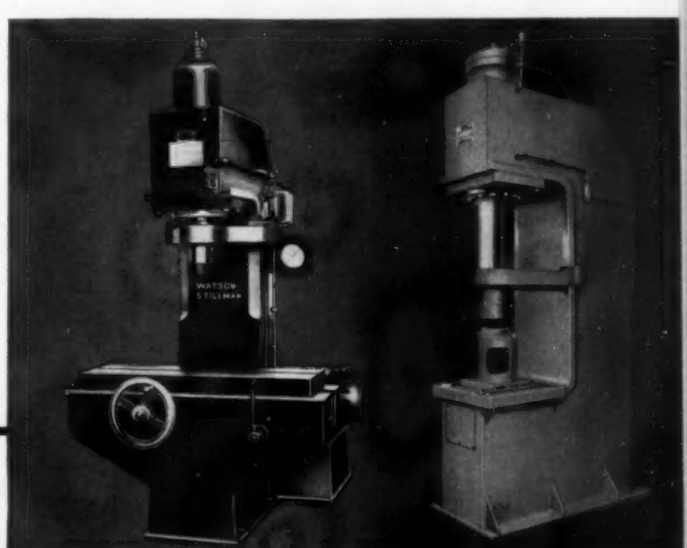


War Busy Presses will do
NEW JOBS HYDRAULICALLY

Some day victory will bring the "cease-firing" order. But it needn't mean "cease-producing" for industries now doing war jobs hydraulically with Watson-Stillman presses. These machines will be adaptable to post-war metal-working operations, and in effecting a rapid, efficient change-over, W-S engineers will be available for special advice.

Their services will put at your disposal hydraulic experience which dates from the eighteen forties. Their suggestions will draw on original research now being carried on. These Watson-Stillman research activities are being expanded in enlarged facilities already under construction.

Watson-Stillman has the modern automatic machinery and the engineering personnel to give practical assistance in planning to meet future requirements. In the post-victory years, the pooled experience of its entire organization can help industry to anticipate its needs correctly. It is not too early now to consult a W-S engineer. The Watson-Stillman Co., Roselle, New Jersey.



To lift war's shadow more quickly Buy

U.S. WAR BONDS

WATSON-STILLMAN

Engineers and Manufacturers of Hydraulic Machinery and Equipment— Hydraulic Presses, Pumps and Jacks, Forged Steel Valves and Fittings

for **INSULATED WIRE**

Tensile strength

Resistance to aging

Dielectric strength

Write Our Technical Service Dept. for Details.

MOORE & MUNGER

33 RECTOR STREET - NEW YORK CITY

SCRAP RUBBER
LARGE STOCKS ARE NECESSARY TO MEET THE NATIONAL RE-CLAIM PROGRAM
CONSULT OUR NEAREST OFFICE
CHICAGO
AKRON
BOSTON
NEW YORK
MEMPHIS
LOS ANGELES
H. MUEHLSTEIN & Co. INC.
BUYING AGENT · RUBBER RESERVE CO.
122 EAST 42nd STREET, NEW YORK, N. Y.
CHICAGO: 327 So. La Salle St. · AKRON: 250 Jewett St. · LOS ANGELES: 318 W. 9th St. · MEMPHIS: 46 W. Virginia Ave. · BOSTON: 31 St. James Ave.

A TIP

from One Who Knows!

★

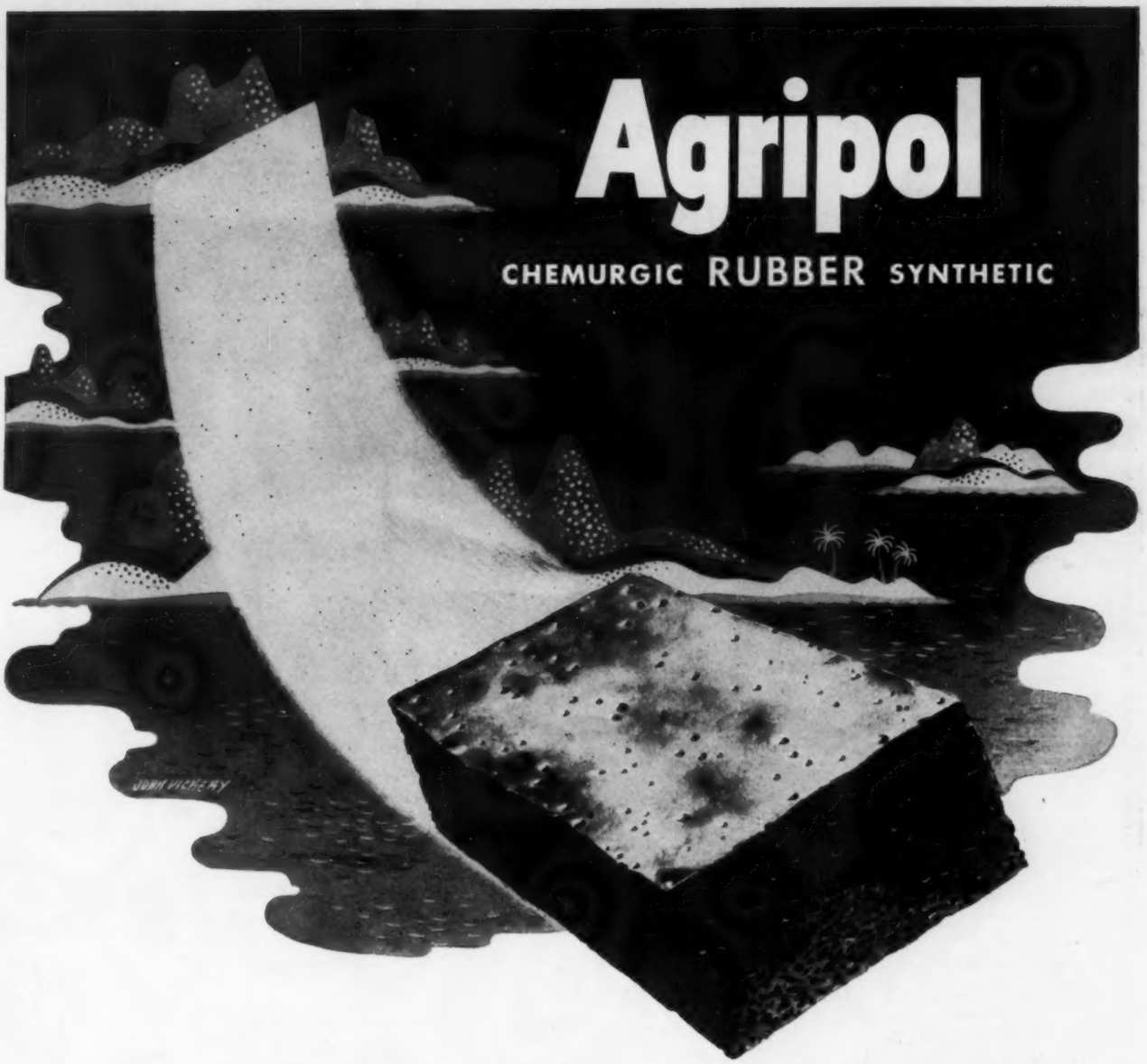
"I'm one of those who sent in a liner to be treated with the Capitol Process Treatment—and I am more than pleased that I did, for I now know from first-hand knowledge how this treated liner helps our plant to economize on materials, time and money—to say nothing of the saving in rubber which we have been able to make because we have greatly reduced adhesion of compounded stock. Further, it has enabled us to reduce materially our purchases of cotton piece goods."*

* The offer is still open: Send us a 50- or 100-yard liner and let us treat it gratis so you can test it in your own plant. No obligation, of course.

TEXTILE PROOFERS, INC.

One Gates Avenue — Jersey City, N. J.

Originators of the Capitol Process Liner Treatment



Rapidly erasing American dependence on foreign rubber sources

Naturally enough—rubber, to most people, means tires. Yet there are thousands of other uses for rubber—all just as vital, and *all eating into the slim supply of natural rubber that could otherwise be utilized for tires.*

And that's where Agripol fits in—because this astonishing new product of farm and science can do, and *is* doing, an even better job than natural rubber in many vital industrial applications! What's more, this *chemurgic* synthetic rubber is made from materials grown in huge quantities right here at home . . . it is already being produced in volume . . . and, for further time-saving, it can be fabricated with present equipment of rubber goods manufacturers!

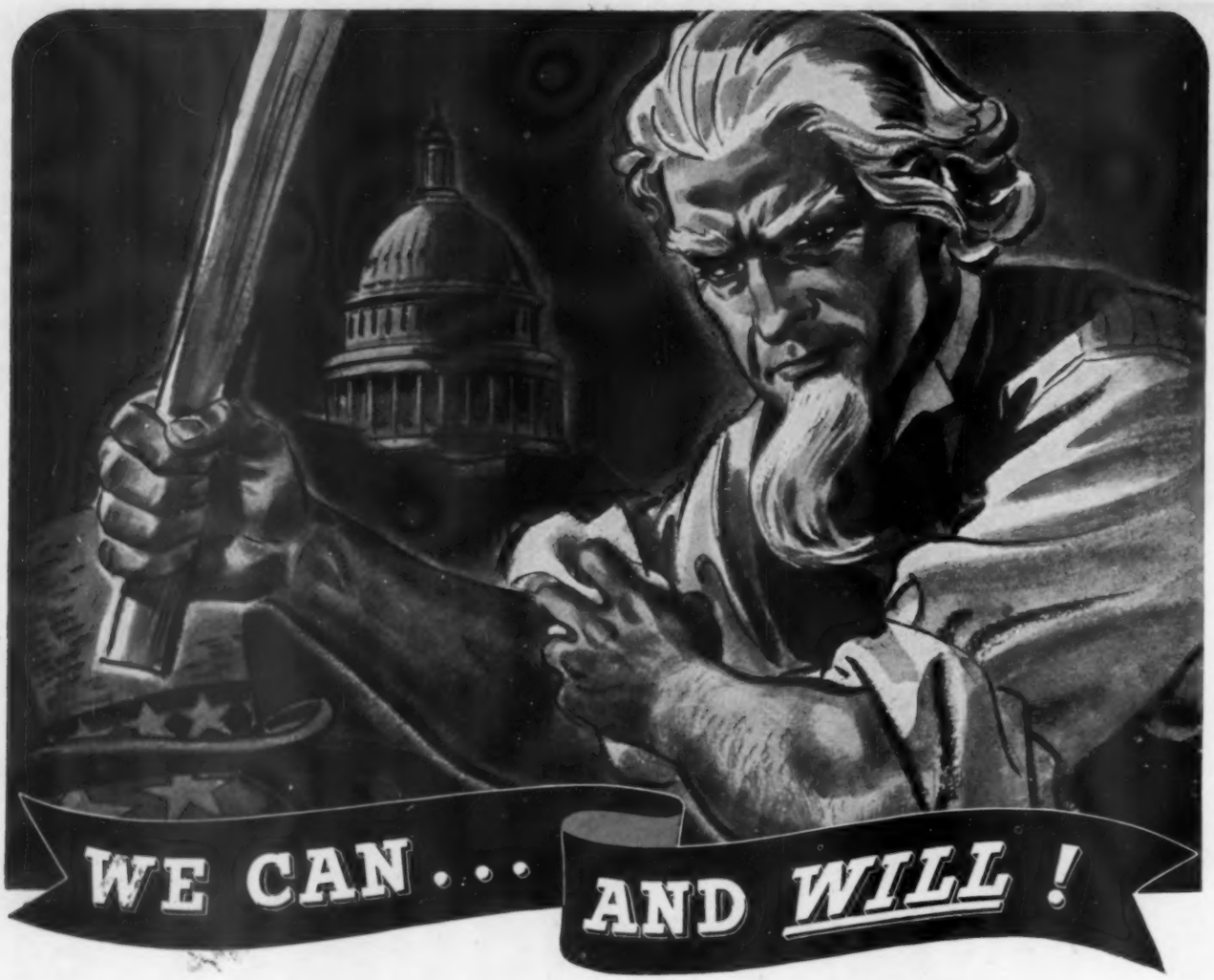
RCI, in collaboration with the Peoria, Illinois, Research Laboratories of the United States Department of Agriculture, offers Agripol to America as an immediate and practical step toward American independence from foreign rubber sources. That is its *present* purpose. For the *future*—it offers one important answer to the longtime hope that industry and agriculture might sometime join hands for the greater prosperity of both.

REICHHOLD CHEMICALS, INCORPORATED

General Offices & Main Plant, Detroit, Michigan. Other Plants: Brooklyn, N. Y.; Elizabeth, N. J.; South San Francisco, Calif.; Tuscaloosa, Ala.; Liverpool, England; Sydney, Australia.

CHEMURGIC RUBBER • INDUSTRIAL PLASTICS • INDUSTRIAL CHEMICALS CHEMICAL COLORS • SYNTHETIC RESINS

RCI



THESE DAYS call for all-out effort—effort that not only does its best, but that *succeeds* in *accomplishing* its purpose.

Your need for solvents is not modified by "maybe" or "perhaps." *You've got to have them!*

We know this because of our years of experience in working closely with your business and many others similar to yours. Thus when you order Skellysolve, *we get it to you.* The present emergency strengthens our determination to do that—and keep on doing that. Phone, write, or wire. We can . . . and *we will.*

SKELLYSOLVE
in the
RUBBER INDUSTRY

There are six different types of Skellysolve which are especially adapted to various uses in the rubber industry, for making rubber cements, and for many different rubber fabricating operations. Skellysolve offers many advantages over benzol, rubber solvent gasoline, toluol, carbon tetrachloride, etc. It will pay you to investigate Skellysolve. Write today.

SKELLY

SKELLYSOLVE

SOLVENTS DIVISION, SKELLY OIL CO.
SKELLY BLDG., KANSAS CITY, MO.

Spreading Sails of the Seven Seas

Spreading sails have fascinated romanticists and poets since long before the caravels of Columbus brought men to the New World. They have inspired some of the world's most appreciative literature.

But even greater appreciation is their due because all social contact, all commercial enterprise and all economic values are based upon transportation. The facility to transport, which sails have given through the centuries, now extends to ships of the air. Cloth, as always, maintains its pace with progress.

RESEARCH AND DEVELOPMENT — cloth has a permanent structure combining light weight with strength and flexibility. On or within this structure filling, coating and processing fits cloth for many uses. *Consider cloth — consult HOLLISTON.* In general, THE HOLLISTON MILLS can take any type of print cloth, sheeting, drill, twill, duck, in widths from 30″ to 80″, and can dye; coat with every type of coating, in any color desired; can stiffen fabrics to meet any required pliability, hand, bond, weight of coating, tensile strength, Elmendorf tear strength, for any industrial use.

BOOKBINDING FABRICS

(a) Waterproof, full coated, impregnated, linens and vellums; pyroxylin and other synthetic resin coatings and lacquer finishes; embossed, plain, super finished, contrast printing.

(b) Starch filled, coated, impregnated, mottled, linen and vellum; plain or embossed, special glazed and matte finishes; natural, rough and smooth finishes.

SHADE CLOTH

(a) Pyroxylin or resin impregnated waterproof, meeting Government specifications; all weights, widths and colors; print cloths, sheetings and ducks.

(b) Starch filled, water color, and Holland type shades; machine oil, oil tints, oil filled opaques; fast dyed duck shades; light-proof and translucent.

PHOTO CLOTH

Photo Mounting cloth (self adhesive), single and double adhesive.

REINFORCING FABRICS

All types of waterproof and starch-filled reinforcing fabrics and industrial cambrics, for books, file folders, file pockets, box stays; to be combined, gummed and plain. Various weights from the thinnest print cloth to the heaviest drills and twills.

SIGN, LABEL AND TAG CLOTHS

Waterproof and starch filled. Designed for any purpose, for hand lettering, letterpress printing, offset printing. We can design a surface that will take any ink or meet any inking problem.

RUBBER SEPARATOR CLOTHS

Starch filled glazed sheetings and base treated starched fabrics for waterproof separator cloths.

INSULATING CLOTH BASE

Base treated and stiffened fabrics for insulating cloths; all weights, widths and thicknesses.

TRACING & BLUE PRINT CLOTHS

White and blue ink or pencil cloth; map cloth; blue print cloth, thin and regular, all widths.

LINING FABRICS

Shoe and drapery linings; starch filled, special filled, mercerized and shreiner finishes; straight backfilled finish; high lustre finish, all colors and widths.

COATED AND IMPREGNATED FABRICS

All widths and colors; synthetic resin, nitro cellulose, thermo plastic and thermo setting coatings; mildew proofing; fire, weather and water resistant finishes; gas impermeable finishes, etc., for war and industrial purposes.

FOR WAR NEEDS we have in present or planned production:—Mildewproofing and asphalt impregnating burlap and osnaburgs for sandbags; fire, weather and water-resistant treatment of Army tent duck and twill; life jacket covers; truck paulins; gun covers; breech and muzzle covers; barrack bags; food bags. Synthetic resin impregnated and colored fabrics, and mildew and weatherproofing for camouflage cloth, mosquito bar drapes, comforter cloth; cellulose caustic pigment padding on mosquito netting tricot and marquisette; synthetic resin hospital sheetings, crib sheetings, waterproof cloths; gas impermeable synthetic resin coatings.

THE HOLLISTON MILLS, INC.

CONVERTING CLOTHS TO GREATER USE FIELDS

NORWOOD, MASSACHUSETTS

Sales Agents in Principal Cities

Outstanding NEW USE

for a LONG-ESTABLISHED PRODUCT

AC

PARRAS

Washed and Dried

GUAYULE

TACKIFIER and EXTENDER for

BUNA S

DISTRIBUTED BY

RUBBER RESERVE COMPANY

•

AMERICAN CYANAMID

& CHEMICAL CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

REPRESENTATIVES OF CIA HULERA DE PARRAS, S. A., MEXICO, PRODUCER

PERBUNAN

the Synthetic Rubber for notable long life . . . unusual resistance to oil . . . exceptional resistance to heat and cold.

PERBUNAN
REG. U. S. PAT. OFF.

While Perbunan is available in quantities up to 200 pounds per month for certain kinds of experimental work, all other allocations are now made by the Rubber and Rubber Products Branch of the War Production Board.

Write STANCO DISTRIBUTORS, INC.
26 BROADWAY, NEW YORK CITY
Warehouse stocks in New Jersey, Louisiana and California

AVAILABLE NOW!

PICCO

Softeners

FOR NATURAL AND SYNTHETIC RUBBER

The following PICCO Coal Tar Polymers and Resins, having the specific qualities needed for softeners, are available now!

Manufactured under rigid quality control, you can specify PICCO Products with absolute assurance of complete satisfaction.

TYPE	USES
XX-100	for high durometer stocks
420-S	for light colored, intermediate hardness stocks
430	for dark colored, intermediate hardness stocks
Di Polymer Oil	for low durometer stocks

PENNSYLVANIA
INDUSTRIAL CHEMICAL CORPORATION
CLAIRTON, PENNA.

For information on all Picco Products except reclaiming materials, write Standard Chemical Company, Akron Savings and Loan Building, Akron, Ohio. Refer inquiries on the reclaiming of rubber to C. H. Campbell, 907 Crain Avenue, Kent, Ohio.

Makers of: Coumarone Resins • Coal Tar Naphthas • Rubber Plasticizers • Reclaiming Oils • Terpene Resins

PRODUCTS FOR SHIPMENT ABROAD MUST POSSESS *Maximum Durability*

IMPORTANT CONTROL TESTS are being made on materials produced for shipment abroad to insure maximum durability of product under extraordinary service conditions. This logical precaution prevents waste of raw materials and conserves valuable time and shipping facilities required for replacing products which might fail in actual service.

THE "NATIONAL" MODEL X-1-A UNIT is used for speedy and accurate determination of the resistance of products to weathering, which includes moisture, sunlight and thermal shock. In this task it is proving extremely successful as evidenced by the number of units now required by those agencies testing such materials.

Product specifications are being met with the X-1-A unit by manufacturers of plastics; rubber; rubber-like materials; fire, water and weather resistant fabrics for many purposes; protective and camouflage finishes and primers; and miscellaneous materials subject to change in sunlight and weather.

This apparatus is procurable on priority rating in accordance with regulations in effect at time order is placed. Write for descriptive catalog L-6400.

NATIONAL TRADE-MARK
MODEL X-1-A *Accelerated* WEATHERING UNIT

NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
UCC
Carbon Sales Division, Cleveland, Ohio
General Offices: 30 East 42nd Street, New York, N. Y.
Branch Sales Offices: NEW YORK - PITTSBURGH - CHICAGO - ST. LOUIS - SAN FRANCISCO

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

BARRETT CHEMICALS FOR INDUSTRY

RUBBER COMPOUNDING MATERIALS

CARBONEX*—A black coal-tar hydrocarbon, in flake form, that carries a high content (40% minimum) of free carbon in finely dispersed form.

CARBONEX S*—Carbonex modified with 5% of available stearic acid for greater ease of milling into plantation or reclaimed rubber.

CARBONEX S PLASTIC*—A plastic form of Carbonex S melting between 175 and 185° F., which may be dispersed in all reclaim rubber compounds on open mills.

PLASTENDER*—A hydrocarbon product in flake form which carries a minimum of 22% free carbon in finely dispersed form.

PLASTENDER S*—Plastender modified with 5% stearic acid for greater ease of milling in plantation or reclaim rubber.

PLASTENDER SD*—This lowest melting of the Plastenders may be dispersed in all reclaim compounds on open mills.

CUMAR*—Paracoumarone-Indene Resin available in grades varying in melting point from 10° C. to 150° C. These are dependable compounding agents for rubber compounds of almost every type.

BARDOL*—A refined coal-tar distillate whose high content of aromatic hydrocarbons makes it an exceptional softener for rubber and an agent for dispersing pigments and fillers into compounds of natural or synthetic rubber.

BARDOL B*—A pale yellow to straw-colored coal-tar oil which is especially valuable as a softener for synthetic rubbers.

DISPERSING OIL No. 10—A medium-boiling oil distilling between about 225-300° C., which has good dispersing and plasticizing properties. Lower viscosity, lighter color, lower gravity than B.R.V. or S.R.O.

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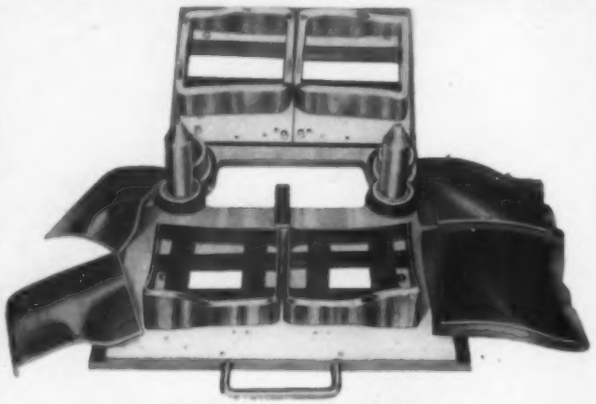

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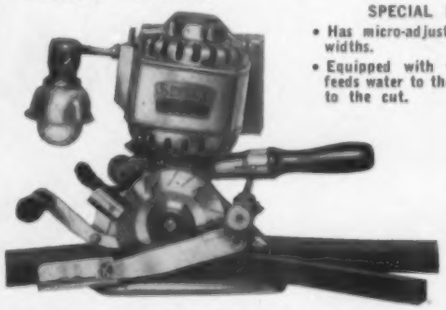

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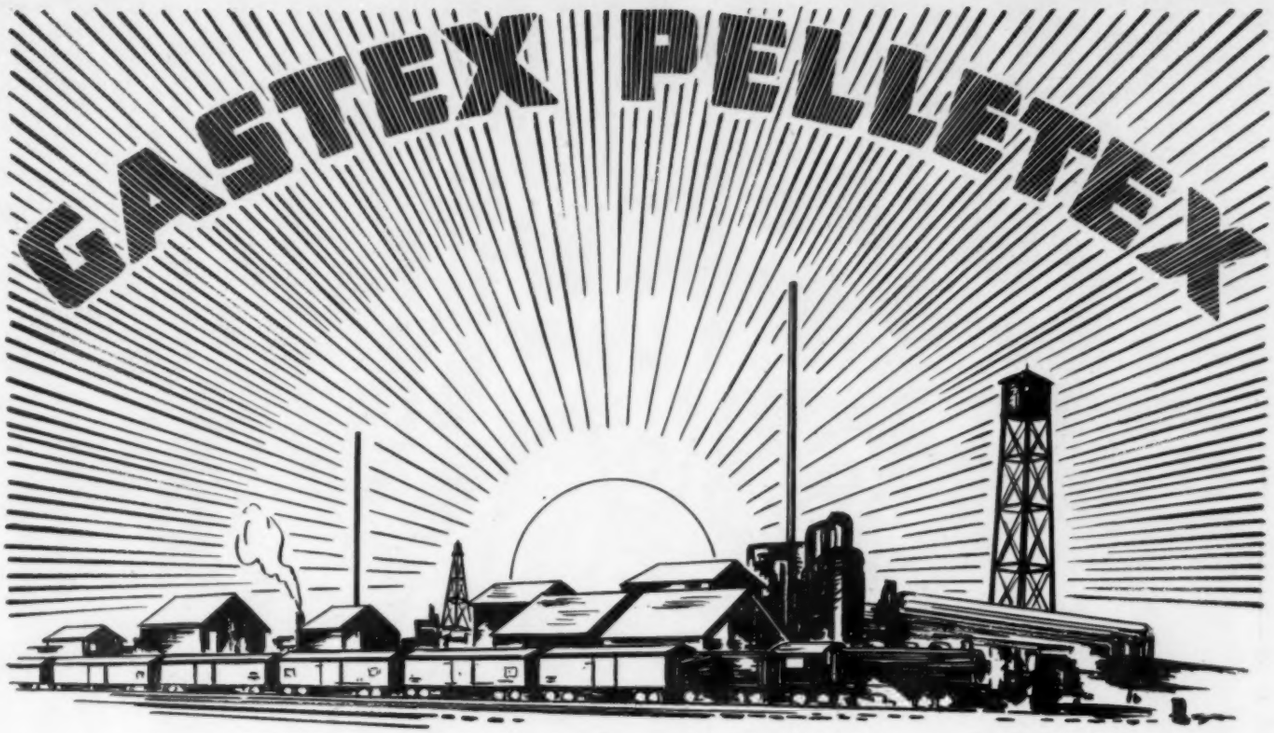

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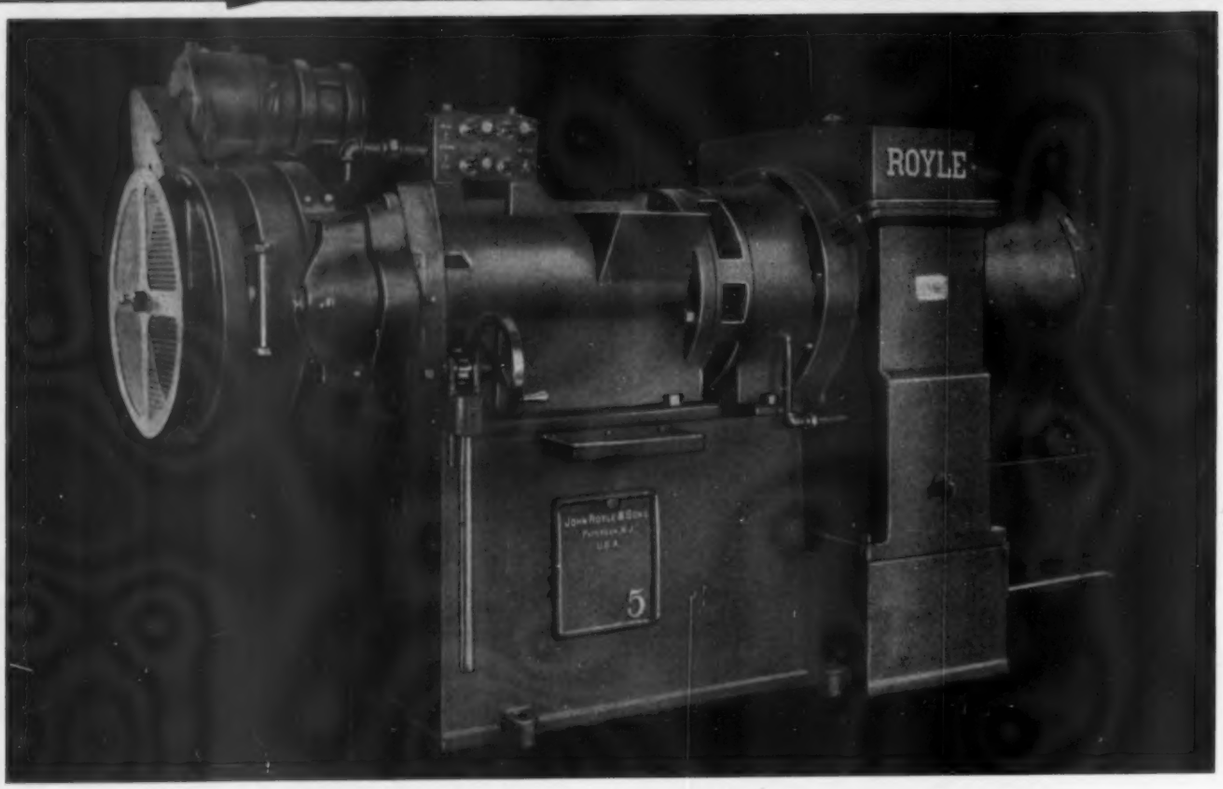

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NUMBER 5

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The **RUBBER AGE**

VOL. 52, No. 5 **FEBRUARY, 1943**

Solution Reclaim

By DR. HUGO FUCHS*

IN the last World War, just as today, Germany and Austria were cut off from the overseas raw material resources. However, the situation prevailing in Germany then was even more unfavorable, inasmuch as very small stocks of crude rubber were available at the outbreak of the war, the production of synthetic rubber was only just beginning, and all other attempts to replace rubber by other means (for instance, by replacing tires by wheels with springs of steel) were unsuccessful. Though the quantities of crude rubber required by both sides were fundamentally smaller than today, crude rubber occupied the same key position among the essential war materials. Under these circumstances, reclaimed rubber constituted the "last" and not as in the present war "first" defense line of the rubber position.

All methods of reclaiming known during the last war, in the United States and England, such as Mitchell's Acid Process, the Alkali Process of Marks, the Heater Process—all these were used in Germany and Austria. Even the use of ground scrap, mixed with mineral oils of high boiling point and heated under pressure, was then in practice. But all these methods lead to reclaims of only restricted applicability: these reclaims were usable as *additions* to crude rubber but not as *substitutions* for it. Such a substitution was afforded only by the solution reclaim which was manufactured in Germany during the war and for many years following it, and which was regarded as by far the best of all reclaims on the world market.

In so far as is known to the author, solution reclaim, more costly than any other kind, has never been produced in the United States or in England. In the lecture delivered by Dr. P. M. Elliot in April of last year on "Reclaims and Reclaiming" at Yale University, in which he developed in detail the history of reclaiming in the United States, solution reclaim was not mentioned. The 1941 issue of the RUBBER RED BOOK (published by RUBBER AGE) contains an elaborate article on reclaiming by Dr. H. F. Palmer, but reclaiming by dissolving rubber in suitable solvents is not mentioned. In June, 1941, in a symposium organized by the Institution of the British Rubber Industry, the most important questions relating to reclaiming were discussed. Dr. H. Stern lectured on reclaiming processes in general. However, no reference to solution reclaim was made. Finally, in 1942, in *The Rubber Age (London)* there appeared a detailed discussion of a plan whereby the production of regenerated rubber could speedily be intensified, but again reference to solution reclaim was lacking.

These facts would not justify a full report on reclaiming rubber scrap by dissolving it, particularly at this time. Historical contemplations are of less interest than heretofore. However, it has been proven that even now, in the age of synthetic rubber, crude rubber cannot be wholly dispensed with and that the ordinary reclaim now available is no substitute for it. Solution reclaim, on the other hand, may be regarded as a substitute for crude rubber—for many purposes—and for this reason a description of the production of solution reclaim is here given. Its properties can easily be established by comparatively simple and inexpensive experiments.

In the German literature on rubber, solution reclaim has frequently been treated with in the past. Of interest in this connection are publications wherein it is compared to other reclaim stocks. In his book *Tech-*

*Formerly Managing Director of the Semperit Oesterreichisch-Amerikanische Gummiwerke, A.G., Vienna, Austria.

nologie der Kautschukwaren, (2nd ed., 1925), K. Gottlob says:

"As a third group of reclaiming methods one may sum up those whereby the vulcanized rubber is dissolved by solvents in heat, and often under pressure. By means of a suitable precipitant or by distillation of the solvent, the reclaim can be obtained from the solution after the removal of the mineral fillers and textile fibers. *These methods result in what constitutes probably the best reclaims and are now very frequently used in Germany.*"

Alexander Is Recognized Authority

Gottlob proceeds as follows: "P. Alexander, known as a specialist in the sphere of solution reclaims, has even succeeded in evolving a kind of latex from scrap. (B.P. 14,681/1905 and B.P. 25,735/1906). These specifications point out that the scrap has to be heated for several hours with a three- or four-fold quantity of benzine, in a closed boiler. Thereupon it must be disengaged from the insoluble fillers and the solution heated in a closed boiler with a strong solution of sodium hydrate and treated with steam, the process continuing until all the benzine has evaporated. At the same time the watery emulsion becomes more diluted by condensed water. Impurities segregate in dirt deposits or can be removed by mechanical means. There finally remains an emulsion or solution of rubber substance in thinned sodium hydrate, capable of being filtered. The rubber substance can be obtained from this solution by means of acetic acid or other acetones, or even by gaseous reagents."

The most detailed description of the production of solution rubber, so far as the author knows, is contained in the *Handbuch der gesammten Kautschuk-Technologie,* edited by E. Hauser, in the chapter on "Rubber Regeneration," written by P. Alexander (1st vol., p. 361). Although this handbook was published as far back as 1935, scarcely any new material has subsequently been published on solution reclaim.

Not until 1900 was solution reclaim manufactured in Germany on a large scale. The reason for the late appearance of solution reclaim on the market may be traced to the difficulty in finding the right solvent, and to the fact that the duration and intensity of heating of the starting materials during the dissolving process are of fundamental influence on the properties of the reclaim.

A uniform distribution of the vulcanized rubber mass in larger quantities of solvent cannot be achieved at ordinary temperature. But at increased temperatures the faculty of dissolving the rubber is increased and at between 120° and 150° C. the rubber mass dissolves completely. When the solvent is removed from the solution by evaporation or steam, the reclaim mass remains in a soft, greasy form. This reclaim is fundamentally different from the reclaims which are obtained in the acid or alkali processes.

The economy of the solution process depends on the quantity of the loss of solvent and therefore installations for recovering the solvent are necessary. The loss can be reduced to 2% of the solvent, which is equal to 200 g. loss per 1 kg. reclaim. The solvents used boil comparatively high. Therefore, those parts of coal-tar which boil at between 130° and 140° C., *i.e.,* the xylol-fractions, are utilized.

The proportion of scrap to solvent depends on the quantity of fabric contained in the scrap. In extracting carcasses with or without beads, the solution boiler of 10,000 liters content is charged with 1600 kg. to 1800 kg. scrap and about 7000 kg. of solvent. As soon as the boiler has been filled and the manholes and supply tubes have been closed, the revolving boiler is slowly rotated and the jacket is heated by steam of 5 to 6 atmospheres. After four to five hours the scrap is completely dissolved, that is, the solvent has assimilated 850 to 900 kg. of rubber. The procedure must be conducted in such a manner that the solution attains as high a rubber content as possible. During the solution process the pressure in the boiler rises to 10 atmospheres.

When using vertical vessels supplied with an agitator, the scrap must be ground so that the fabric can be removed from the boiler, together with the solution, as pulp, after the treatment. The thick pulp is passed through sieves, which separate it into solution and residue. The remaining fabric particles are removed from the reclaim solution as completely as possible by centrifuging, and are then washed out with new solvent and placed in rotating drums, where they are entirely freed of solvent by distillation with steam under decreased pressure.

This entire process may be carried out in a single apparatus, built in such manner that large pieces of scrap can be digested. The emptying of the digester takes place by suction or by means of pressure gas. The solution flows automatically into the evaporators. The best results are achieved by the use of vacuum drying drums, heated by steam, on the inner surface of which the reclaim—segregated from the solution—is deposited as a thin film. The evaporation process is conducted in a manner by which the mass is set completely free from the solvent by heating steam, which is introduced into the interior of the drum with 4 to 5 atmospheres overpressure. At the same time the mass becomes polymerized.

In the interior of the evaporator the reclaim mass is wound up on a wiping knife and tears off, as soon as it has obtained a certain thickness. It drops into a lorry, stationed in the drying chamber. The hot mass is collected into a big cluster in the lorry and as soon as the latter is filled, the process is interrupted to allow for the dumping of the lorry, after the content has cooled off. The block of about 200 kg. is then divided in a cutting machine by well-wetted knives into pieces of from 10 to 20 kg. which are lightly powdered and represent the reclaim, ready for shipment.

Special Advantages of Solution Reclaim

Purity, absence of all non-colloidal filling materials, fineness of structure—these can only be obtained from solution reclaim. These properties underlie the fact that solution reclaim can be used even in such cases where other reclaims are unsuitable. Solution reclaims, for example, can be used for manufacturing hard rubber articles, or for spreading compounds, and for a variety of other purposes.

It was only the costliness of the production process which in normal times prevented the use of solution reclaim on a large scale. Under present conditions it might be of great importance, because even dark and heavily filled scrap can be converted into a reclaim of a specific weight of less than 1.0.

Some of the "New" Roles of Rubber in Modern Warfare

Parachute Troopers, Inflated Boats and Pontons, and Balloons Were Among Military Products Foreseen by Goodyear and Franklin

By RALPH WOLF

THE old saying that there is nothing new under the sun is well borne out by a consideration of some of the "new" roles which rubber is playing in modern warfare. Even the briefest list of innovations in the "science" of war undoubtedly would include such things as the parachute trooper, the barrage balloon, and inflatable boats and pontons. Since none of these devices were used to any extent in the First World War they must, therefore, be considered innovatory.

New as their actual use may be, however, the ideas themselves are time-worn and fusty and certainly no newer than two such modernists as Charles Goodyear, the founder of the rubber industry, and Ben Franklin, philosopher, statesman, scientist and kite-flyer. These two foresaw soldiers descending from the clouds, inflated boats carrying armies over rivers regarded by defenders as safe barriers, balloons as weapons of war.

The former's contributions to modern warfare shall be touched on first since they are more directly concerned with the rubber industry. Franklin's far more prophetic vision will be but briefly mentioned.

Today, in some far Valhalla of Vulcanization, Charles Goodyear may well stand with a pleased smile upon his face. Although he has been vindicated times without number in the past hundred years as one after another of the applications he advocated for "metallic gum-elastic" have come into common usage, the present state of affairs must be particularly gratifying to him. For today, the billion dollar rubber industry that was born in the Woburn kitchen where Charles Goodyear experimented is regarded as such an important part of the War Program that its production of civilian goods has been almost entirely curtailed in order that it may concentrate on military items, a great many of which were suggested by the Yankee inventor long ago.

Goodyear Pushed Military Products

The use of india-rubber for military purposes was always particularly close to Goodyear's heart and he clamored for its employment in such uses with even more than his customary vehemence. So convinced was he of its martial value that he even managed to suppress a natural conservatism that normally would have been strenuously opposed to that once great bugaboo of present-day economic royalists, "government in business." Although he declared himself "fully aware that reasonable objections may be made to the extension of government patronage, and especially that of a republican government, to particular branches of industry; and that it is deemed impolitic for governments to manufacture those articles which can be made by private individuals" he thought it "expedient for governments themselves to make those articles which are needed only for government purposes." This was a statement preliminary to urging that the government itself go into the rubber business and turn out the naval and military articles it might need.

Some Early Suggested Military Uses

Goodyear, of course, had no conception of some of the most important uses to which rubber is put by the modern military man; for example, in tires and tracks for all forms of land transport, in insulation for telephone and radio equipment, or in gas masks. But in the day of horse transportation and of industrial power from waterfalls or small steam engines he could hardly have foreseen the rise of the automobile and of the electric power industry any more than he could anticipate the development of poison gases by an advancing civilization.

Some of the military uses he suggested are quite obvious ones—pistol holsters, sword sheaths, cartridge boxes, powder and provision bags, cannon covers, waterproof blankets, canteens, haversacks and knapsacks.

In a third class, however, are a few items which we are apt to credit unthinkingly to the ingenuity of our present foe. These include a variety of inflatable boats, rafts, pontons and "balsors" (single air cylinders) to which Goodyear devoted a number of pages in *Gum-Elastic*. So clearly does he expound their merits that it might almost be assumed that Hitler's generals have read that volume as assiduously as they are reputed to study *Mein Kampf*.

One of the first orders placed by the government over a hundred years ago for any type of inflatable goods was for air pontons which Goodyear describes as being made of coated canvas "in three compartments cemented together, each compartment being inflated by a separate tube, forming together a raft or

boat about six feet wide and eighteen feet in length." Any more exact description of the inflatable pontons which are being built for the Corps of Engineers today in a score of the country's rubber factories would almost lay the writer open to charges of revealing military secrets. At last, after a hundred years, it appears that rubber manufacturers are beginning to catch up with some of Goodyear's ideas.

In regard to "india-rubber pontons and ponton boats" Goodyear mentions that "the attention of the United States and other governments was early drawn to them, as being inventions deserving of encouragement." The very earliest of these air-filled devices apparently were made before the discovery of vulcanization and as Goodyear explains "were not as useful as was anticipated." Even after the discovery of vulcanization, the boats did not meet with too much favor, perhaps because of unsatisfactory construction—they were filled by a hand bellows which was inconvenient as well as laborious and, besides, the smallest leak caused them to collapse and sink. Objections such as these have been overcome in the constructions employed today.

In another place in *Gum-Elastic* Goodyear states that boats were among the first things that were attempted to be made of india-rubber not only in the United States, but also in Europe. But "so far as the writer can ascertain, the experiments for this purpose have been chiefly confined to bags of air of various form. Among these may be noticed the ponton made first for the United States government, by the Roxbury Company, in 1836, of unvulcanized gum-elastic, and a considerable number made of vulcanized gum-elastic in 1847, which were intended to be used in the Mexican campaign. The first manufacture, as might be expected from the nature of the gum, was unsuccessful and the practical utility of the latter, which were made to be filled with air only, may be considered equally doubtful."

The portable folding boats which Goodyear deemed most worthy of notice had coverings of "plated" (*i.e.*, rubber covered) canvas over ribs made either of iron or wood covered with "caoutchouc whalebone" (hard rubber). Best of all, of course, because safest, he thought were the boats formed of a series of air tubes or cylinders each inflated with a separate tube. These surely were the prototype of today's inflated reconnaisance boats and landing barges.

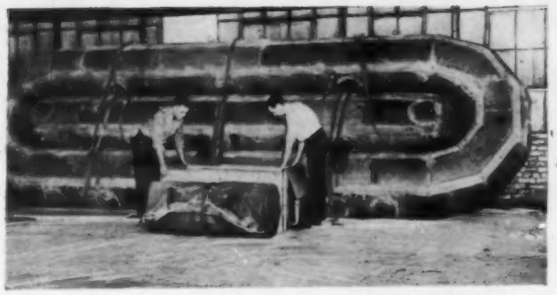
If Goodyear gets the credit for conceiving the idea of the inflated boats and pontons which are of so much importance to the modern military man, some small measure of tribute should also be paid to Ben Franklin for foreseeing the parachute soldier. As stated above, Franklin's flight of fancy had no particular connection with the rubber industry but is mentioned here because it is of more than passing interest at the present time.

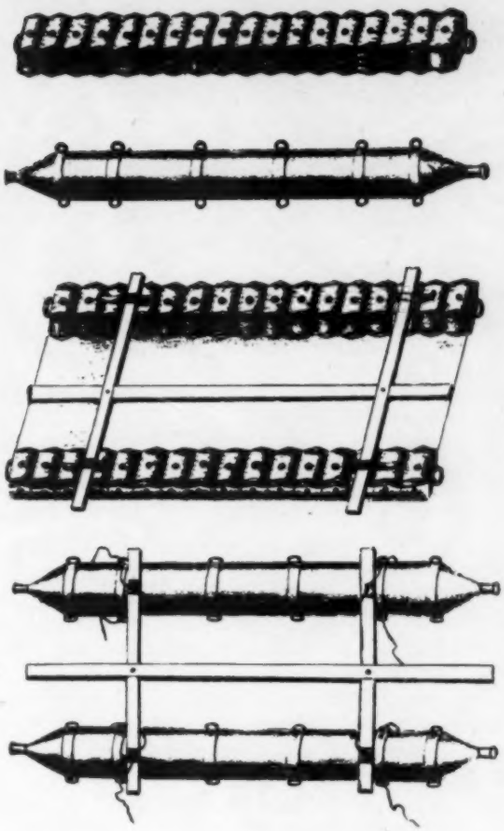
On August 27, 1783, Franklin saw the first balloon ascension in Paris when Jacques Alexandre Cesar Charles, the great physicist, filled a varnished silk bag with hydrogen gas and sent it soaring into the clouds.

Franklin, whose mind was ever curious about anything new under the sun, followed the balloon experiments with avid interest. He talked with Joseph Montgolfier, although his gout kept him from going to Versailles when the latter sent up a balloon carrying a sheep, a chicken and a duck for the edification of the king and his court. The American witnessed the first ascent of human passengers in November when de-Rozier and the Marquis d'Arlandes, burning straw in a grate hung beneath their balloon, were lifted five hundred feet in the air and carried across the Seine to land in Paris. In December he saw Charles set an altitude record by ascending two thousand feet in a hydrogen filled bag from the Tuileries. Skeptics who regarded the experiments as foolishness and a waste of time asked what good a balloon could be. To which Franklin answered, what good was a new-born baby?

He wondered if the discovery might "possibly give a new turn to human affairs. Convincing Sovereigns of the Folly of wars may perhaps be one Effect of it;

The three types of inflatable boats on the left are reproduced from Charles Goodyear's "Gum-Elastic" and, in principle, are quite similar to the inflatable life rafts below currently being made by the Goodyear Tire & Rubber Co. for the U. S. Navy.





The inflated air cylinders and pontons on the right are also taken from "Gum-Elastic" and are not very different from the massive rubber pontons above which are now being used by the U. S. Armored Force to form bridges for heavy military loads.

since it will be impracticable for the most potent of them to guard his Dominions. Five thousand Balloons, capable of raising two Men each, could not cost more than Five Ships of the Line; and where is the Prince who can afford so to cover his Country with Troops for its Defence as that Ten Thousand Men descending from the Clouds might not in many places do an infinite deal of mischief, before a Force could be brought together to repel them?"

Today the invaded countries of Europe and the Isles of Greece will bear witness that "Ten Thousand Men descending from the Clouds" can "do an infinite deal of mischief" and today again the value of "Ships of the Line" is being questioned as it was by the great philosopher.

In this connection, it might be pointed out that the idea of making balloons of rubber occurred to Goodyear although he never thought of them as weapons of offense as Franklin did. At the time of writing *Gum-Elastic*, in referring to balloons he said "as yet there has been no trial of the article upon a large scale, but from repeated trials upon a small one with globes, there is every reason to suppose that the corded gum-elastic vellum would answer well for this use; and if so, it would certainly be stronger, and cost less by half than oiled silk."

Earlier mention has been made of the fact that some of the military uses Goodyear suggested were obvious ones, at least to present day minds. Even so the catalogue is of interest and some of the items are briefly presented below.

"Tents," we are told, "may be best formed of the plated or corded gum-elastic fabrics. They may also be made by pitching the camp blanket which is sometimes constructed with eyelets and a fly for this use . . . about one-third of the blanket being turned under, so as to form the carpet or bottom of the tent. It is often very desirable to use gum-elastic for sleeping on the ground, but on account of its closeness, in dry and moderate weather, it is unsafe for one to be wrapped in it closely." Rubber tent carpets when attached to the tent with snaps "render it warm and comfortable and prevent the rain and snow from driving underneath the tent." When soldiers "are compelled to sleep on the ground . . . in encampment . . . an article which excludes all dampness must be a great comfort and a great security to health."

Highly recommended was a musket cover made from "plated gum-elastic fabric" and "inflated by the self-acting valve tube." This was not only "sufficiently buoyant to float the gun or rifle" but it would also "answer in a good degree as a life-preserver to the . . . soldier, in crossing a river." Cannon covers were intended for use "instead of pent-houses to protect guns . . . from the effects of sun and weather." Cannon sponge covers, sword and pistol covers, sword sheaths, and cartridge boxes all were considered worthy of somewhat detailed description, and Goodyear paid particular attention to them.

In haversacks, Goodyear especially favored one "manufactured in two apartments, similar to gum-elastic fish bags, one . . . made of the perforated, the other of the water-proof fabrics; consequently, the articles in one of them will be protected from wet, and those kept in the other will have the advantage of a circulation of air." The inventor thought that powder bags of rubber coated canvas could be used by the army instead of barrels and that these would keep powder dry even though stored under water. Provision bags which "were extensively used and approved by the troops of the United States government during the Mexican war" were useful not only for provisions "but for other merchandise and for papers, to protect them from loss or damage by water."

The sovereign substance might as well be used for keeping water in as for keeping it out, figured Good-

year, in announcing canteens made of "plated cloth, corded vellum, or vegetable leather," names for different types of compounds. When used in conjunction with the inflated musket cover mentioned above the canteen was "quite sufficient to buoy up a man in the water." Water tanks, which were extensively used by United States troops during the Mexican War, were "a larger kind of water bottle . . . so trimmed that they might be . . . transported on horseback like saddle bags." He commented that this method of transporting liquids was "returning to primitive customs which still prevail in the East, except, that instead of skins, vegetable leather, which is far better, is used."

He also felt that the making of gun and pistol stocks of caoutchouc ivory (hard rubber again) offered an important economy because they could be molded into different forms, either plain or ornamental, with trifling labor without waste of material. Pistol holsters made of "caoutchouc whalebone combined with vegetable leather" (Goodyear's terms for hard and soft rubber) were claimed to be cheaper than leather and also more waterproof.

Akin to pontons were the wagon floats, invention of which was credited to Col. Henry Staunton. These consisted of pairs of India rubber cylinders by which "loaded wagons are easily floated across rivers." The same cylinders, according to Goodyear, could be used for rafts and "for making floating bridges when placed at suitable distances from each other and anchored."

Naval Affairs Were Not Overlooked

Naval affairs were far from being overlooked by the india-rubber man. Here again, a few of the uses suggested in *Gum-Elastic* are long since antiquated. For example, the rubber coated sails, passionately advocated by the inventor but outmoded by the advances of power navigation, were held to promise such advantages as "to stagger belief and excite incredulity." Out of date, too, because of the advances made by hydraulic engineers,, are Goodyear's gun recoil springs. However, his conception of the function of rubber in such an application has only in recent years been rediscovered by physicists intent on dampening out vibrations. "The strain and injury done to vessels of war by the recoil of the guns," said Goodyear, "is an evil for which a remedy has long been sought. For this purpose it has been proposed to use springs of gum-elastic, acting either by extension or by compression."

As with the military uses, a number of the naval ones are obvious such as tarpaulins, hatch covers, hammock covers, hammocks, "not liable to be infected with vermin," boat fenders, gaskets for hatches, ship lights, belts, knife sheaths, and sou'wester hats. Tarpaulin hats were also suggested although Goodyear did not expect them to meet with much approval. "They are much lighter, and much more durable than those made of painted canvas, but whether they will be adopted by Jack instead of the article made by himself, during his leisure moments, is a matter of doubt." Obvious, too, were the deck scrubs "or what are termed by sailors Squeal Gees" which were "fast getting into favor for scouring vessel's decks" as they were "incomparably more durable and economical than bristles."

"Submarine armor" was the term applied to a dress and apparatus made of vulcanized fabrics which was

Type of assault boat now being made for the U. S. Marines. The principles behind the construction of such boats are incorporated in "Gum-Elastic."

designed as a substitute for the diving bell; the forerunner, undoubtedly, of the present day diving suit.

Ships' water tanks which afforded more compact storage and which could be filled with air instead of water to form emergency life boats or rafts were suggested. The ordinary sailor's bag could be made to fit a similar purpose if fabricated of rubber. They were "designed not only to answer the purpose of a clothes bag but also to render any boat a life boat by lashing to it a number of the bags filled with clothing." Ships' letter bags and bread bags presumably could have been similarly used. The latter were designed for use "instead of barrels by which means bread was kept dry and room was also saved in storage."

Rubber budge barrels for "safe keeping of cartridges on deck during an action" had been made of leather prior to Goodyear's time and these, of course, were not at all waterproof. Hollow, inflatable rubber balls which could be hoisted to mastheads for signal balls were first made of gum-elastic, so Goodyear notes, by order of Commodore Smith of the United States Navy. Tompions made with an outer surface of an inch thickness of rubber over a wooden core were announced as the "perfect cannon cork" which kept the cannon "dry and free from rust."

So greatly among rubber's maritime uses did Goodyear admire the shot plug, invented by Lieut. Seely, that he devoted nearly three pages of *Gum-Elastic* to a glowing account of its merits. In part he quoted from the Lieutenant's advertisement: "This invention is, without doubt, one of the most perfect, ingenious and valuable articles ever patented in the world; and for simplicity and usefulness, unequalled for the purpose intended, *viz.:* For stopping the holes made by cannon balls in the sides of ships." Advantages claimed for the device were that repairs could be made from the inside thus avoiding the necessity of dangling carpenters over the side to the great edification of enemy sharpshooters; it did not retard the speed of the vessel; and the foe could be deceived as to the extent of the injury suffered.

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"The Writings of Benjamin Franklin," Vol. IX, edited by Albert Henry Smyth, New York, 1905-07.

HAYDENITE
—in the Production of Service Raincoats

Some two months ago the Stanley Chemical Co., East Berlin, Conn., announced the development of Haydenite, a synthetic resin formulation which possesses many of the characteristics of rubber, several properties which are claimed to be definitely superior to rubber, and widespread industrial applications. One of these applications is in the manufacture of service raincoats, which must meet rigid coating and cloth specifications. Use of Haydenite in the production of these raincoats is the subject of this article, the data being taken from a booklet on the subject recently issued by the manufacturers.—Editor.

ONE of the ways in which Haydenite is helping to win the war is in the production of service raincoats . . . necessary to the comfort, health and fighting efficiency of our armed forces. The Quartermaster Department has established specifications covering the type of coating and cloth which shall be used. These specifications are physical and in most instances rigid, quite properly, to insure an entirely suitable raincoat fabric and finished garment. Haydenite not only meets all of the requirements of these specifications (QMD 71C) but it also provides a fabric and garment of extreme lightness and pleasing appearance and feel when properly coated and fabricated.

The production of raincoat fabric is accomplished by the use of two Haydenite solvent formulations, one serving as the base coat, and the other as a top or finish coat. The Haydenite base coat provides the major part of the total coating and resistance to low temperature cracking whereas the top or finish coat serves to provide the dull finish and resistance to sticking or blocking as required under the army specification.

Thermoplastic Type Now Used

The Haydenite now used in large volume for army raincoat fabric is a thermoplastic type of solvent solution formulated for application on ordinary rubber spreaders or pyroxylin coating machines which permit the spreading of successive coats under a doctor knife. As might be expected, the number of coats applied to the fabric will vary in different plants as the coating equipment varies, but it is generally found that the application of five or six coats of the base coat and one or two coats of the finish coat will produce the best results. In the interest of economy of critical materials it is recommended that the coating should be applied so as to have a finished dry weight of from 2.8 to 3.2 ounces per square yard.

The production of coated fabric of good uniformity, proper smoothness, and freedom from window panes or holes is accomplished by the use of a facing calender after the first, second or third coat of base coat has been applied to the cloth. This is an important and necessary operation for best results, and insures coated fabric having high hydrostatic resistance, a desirable feature of any rainproof garment. The operator of the coating machine should determine the proper time in the sequence of operations for the facing calender operation. A sufficient amount of base coat should be applied to the cloth regardless of the number of coats applied to present a uniformly coated piece of cloth largely free from window panes or holes after the calendering operation. The production of a successful piece of fabric is assured by the application of the proper amount of base coat and by the successful calendering of that proper amount.

Coating Application Relatively Simple

The application of coatings after the calendering is a simple, straightforward coating operation. The determination of the number of coats that should be applied before the calendering operation can be readily accomplished in each plant, and when the procedure has been established an extremely uniform product can be produced day in and day out with Haydenite.

This type of Haydenite is fundamentally an air drying material requiring no curing operation. It is therefore a material which can be readily used in plants not equipped with curing ovens which is one of the reasons why it is so economical. It is essential, however, that the solvents in Haydenite be thoroughly removed between each application. This is accomplished by the heat available on ordinary spreaders, it only being necessary to adjust the heat, the weight of the coating, and the speed of the travel of the cloth. In the event that the finished fabric still contains traces of solvents, readily distinguished by the odor, it is recommended that the finished fabric be heated for approximately one half hour at 180° F. to drive off all final traces of the solvents. Haydenite coated fabric should be odorless and the presence of odor indicates that solvents have been retained in the coating. These solvents will leave the coating eventually without heating, but for practical purposes it is desirable to eliminate the solvents by heating.

Haydenite coated fabric processed as outlined will have a dull pleasing smooth surface, olive drab in color. The coated fabric will be extremely flexible, soft and yet tough, and of good hand. The coating will not block, that is stick together face to face, when heated for one half hour at 180° F. It will not cold crack at 20° below zero.

Specification QMD 71C requires that the fabric be tested at zero degrees F. and show no tendency to crack at that temperature. The coated fabric will withstand hydrostatic pressure of 55 pounds or more, and will not stiffen appreciably under water spray test, and will be found to have excellent aging and weathering characteristics.

The following information will be of value to those

interested in using Haydenite for the processing of cloth for army raincoats, army rainsuits, and other materials required by the armed forces under similar specifications.

Haydenite Base Coat for QMD 71C is designated as No. 66K-2214. This material weighs 7.95 plus or minus one tenth pound per gallon, and contains 37% solids. It is olive drab in color. Haydenite finish coat is designated as No. 66K-2215A. It weighs 7.90 plus or minus one tenth pound per gallon and contains 30.7% solids. It is olive drab in color and produces a dull finish. These materials are intended for use for the production of one side coated army raincoat fabric. Specification QMD 71C specifies that the coating shall be on one side of the fabric.

Discussion of Two Side Coated Fabric

There is a certain demand for two side coated fabric. It has been determined by actual test that the act of coating both sides of the fabric weakens the tear strength of the fabric to a considerable extent. It has also been established that a coating material which has excellent resistance to cold cracking when used on one side of the cloth does not have the same resistance to cold cracking when the coating is divided between both sides of the cloth. The application of finishing materials to both sides of the cloth where cold cracking resistance is required therefore calls for the use of a different coating for use on the previously uncoated side. This special back coating material is designated as No. 66K-2221A Haydenite back coating.

In describing the method of producing two side coated fabric we shall call the side with the most coating the face and the side with the minimum coating the back. The procedure then is to finish the face of the fabric in the customary manner as described for one side coating obtaining as good a coating job as possible. The cloth should then be turned over and coated with the necessary number of coats of back coating to give the desired protection to the fabric. We believe that two coats of back coating with a thin knife will apply approximately .75 ounces of dry weight per square yard which would seem to be a satisfactory quantity. As stated before, the back coating definitely increases the tendency toward cold cracking so that a two side coated fabric is at best inferior in this respect to a single side coated fabric, and particular care must be taken in the coating of the face or heavily coated side to obtain the desired quality in the two side coated fabric.

While two side coated fabrics have definite weaknesses, namely, lower tear strength and less resistance to cracking at low temperatures, they likewise have advantages. The principal advantage is in the fabrication of garments by the use of cements. In the fabrication of garments by cementing most seams are of the face to back type, that is, coated side to uncoated or lightly coated fabric.

To meet the demand for cements and cementing methods we have developed Haydenite cements and a cement solvent recommended for use with Haydenite coated fabric and for use only with such coated fabric. Haydenite cements are of two types varying only as to viscosity and solid content to meet the demand for both brushing and fingering cements. The fingering cement is designated as No. 69K-416A and it is of heavy viscosity, and is intended for application by the use of the finger. The brushing cement is designated as No. 69K-417A. This is of lower viscosity and can be applied with a brush or a swab as the name implies. The solvent is designated as No. 79K-101.

There are two types of seams which must be produced in the fabrication of a raincoat or other article with Haydenite coated fabric. These are seams which are face to back . . . coated side to uncoated side . . . or heavily coated side to lightly coated side in the case of two side coated fabric . . . and face to face or coated side to coated side of the fabric.

To make a face to back seam with one side coated fabric the procedure should be to apply brushing cement or fingering cement to the uncoated side of the cloth, and the cement should be allowed to dry. It is important that the proper amount of cement be applied and the proper amount is that quantity which will leave a film of cement above the cloth when the cement is dry. At the time of making the seam the cement solvent should be brushed or swabbed on the coated side of the fabric and on the cement coated side of the fabric in order to reactivate the coating and the cement. The solvent should be allowed to reactivate the coating and the cement to the point of tackiness which will require approximately 30 seconds, and then the two reactivated surfaces should be placed together and rolled. When the solvents have been removed from the seam by heating for one half hour at 180° F. or by allowing to air dry for a sufficient length of time seams made in this fashion will develop a strength of five pounds or more on a one inch seam. QMD Specification 71C requires a seam strength of three pounds on a three-quarter inch seam.

The procedure in making a face to face seam, that is coated side to coated side, requires only the reactivation of the two coated surfaces. Cement solvent should be brushed or swabbed on the two coated surfaces and about thirty seconds should be allowed for the solvent to reactivate the coating, and the two surfaces should then be placed together and rolled. This type of seam after heating for one-half hour at 180° F. or after allowing the solvents to leave the seam by air drying will develop a strength of four and one-half pounds or more on a one inch seam. QMD Specification 71C requires a seam strength of three pounds on a three-quarter inch seam.

In the instance of two side coated fabric, seams should be made as in the case of face to face seams described above—that is, by the reactivation of the coating on the face and the back with cement solvent.

Developing Curing Type of Haydenite

To this point we have described Haydenite, the processing of cloth and the fabrication of garments with the thermoplastic type of Haydenite which is the type most widely used in service raincoats at this time. Development work has already been completed on additional types. One type which shows considerable promise and which will undoubtedly be widely used in the future is a thermosetting Haydenite . . . that is, Haydenite which requires curing similar to rubber curing. This type will also be supplied in solvent formulations for application by spreading. It is possible that after this curing type of Haydenite has been applied to the cloth it will be fabricated into raincoats or other products prior to the curing operation. In this case the seams will have exceptional strength . . . the strength developing in the curing operation.

An Answer to Comments on

Accelerators for Latex: Water-Soluble vs Water-Insoluble

By H. H. ABERNATHY

Rubber Laboratory, E. I. du Pont de Nemours & Co., Wilmington, Delaware

To the Editor:

For some time I have intended writing to you concerning comments on my article "Accelerators for Latex: Water-Soluble vs. Water-Insoluble" (RUBBER AGE, December, 1941) which have been made by Dr. Henry P. Stevens (*I.R.J.*, May 23 and June 27, 1942) and Dr. Philip Schidrowitz (*I.R.J.*, May 9 and May 30, 1942). I have now had the opportunity to secure some additional data and wish to offer it in the hope that it may serve to clarify matters. These data concern the conclusions drawn by Dr. Stevens in his second letter (*I.R.J.*, June 27, 1942) which are as follows:

Conclusions Drawn by Dr. Stevens

"I conclude, therefore, that the porous plate films do cure more slowly, seeing they have a lower moduli, than the smooth plate films; that if the modulus and tensile properties are not used for ascertaining the state of cure some alternative method should have been applied; that there are no grounds for assuming that rugosity of surface affects moduli or at least the author has produced no evidence to this effect; that the possibility of absorption of dispersed accelerators must be taken into consideration as likely to occur unless evidence is forthcoming to the contrary and that, finally, the absorption of serum substances will influence the properties of the film, particularly aging properties apart from accelerator content."

Discussing Dr. Stevens' first conclusion, it is necessary to define as pertains to this case, state of cure and rate of cure. The former, as was pointed out in the original paper, is the cure having the maximum modulus at 600% elongation attainable by curing the films at 200° F. The latter is characterized by the time it took to attain this modulus. If, then, the porous plate films *never* attained as high a modulus at 600% elongation when cured at 200°F. regardless of how long they were heated at this temperature but did attain their own maximum modulus in the same time (and at the same temperature and elongation) that the smooth plate films attained their maximum modulus they must have had the same *rate* of cure. It is true that the porous plate films were not heated indefinitely to see if they would ever attain the same modulus as smooth plate films; however, they were heated in nearly all cases to the point where reversion was definite. I contend, then, that Dr. Stevens' first conclusion is not justified.

Obviously, one would expect two similar films from the same compound to have the same moduli and, if they did not, as was the case here, one would cast about for an explanation. In the original paper it was shown that whatever the reason it was not accelerator loss. Dr. Stevens criticizes this, and justly so, by saying that no data were shown to prove that the water-insoluble accelerators were not drawn into the pores of the porous plates. I have now had opportunity to investigate this point and find that, in fact, not enough water-insoluble accelerator is drawn into the plate to be detected by the usual qualitative tests. This was established by leaching several of the plates with dilute hydrochloric acid until no heavy metals (particularly zinc) could be detected.

Films from Compounds 3 and 4 containing respectively zinc diethyl dithiocarbamate and zinc dibutyl dithiocarbamate were then made on the plates by the method outlined in the original paper. Then the films were removed and the plates again leached with dilute acid. If any accelerator had been left in the plate a positive test for zinc should have been obtained from the acid used for leaching. However, such was not the case. The dithizone, diethylaniline and diphenylamine qualitative tests for zinc as outlined by Yoe and Sarver in their book "Organic Aanalytical Reagents" (John Wiley and Sons, New York, 1941), were used.

Actual Causes of Lower Modulus

If accelerator loss is not the cause of lower modulus, other possibilities, as Dr. Stevens points out, are roughness of surface, loss of serum substances, and inaccuracies in measuring thickness. That the first may contribute is shown by the following data obtained using Compound 4 (see original paper):

Film Cast On	Air Cure Min./°F.	Stress in psi * at 600%	Stress in psi * at 800%	Tensile Strength at Break, psi	Elongation at Break, %
Glass Plate...	90/158	500	2250	5350	1010
Porous Plate..	90/158	425	1600	3275	940
Ground Glass Plate	90/158	450	1775	3600	925

* Pounds per square inch.

The ground glass plate used was one which had been ground so as to have, visually, the same sort of surface as the porous plate.

As to the second possibility, loss of serum, it was not studied, since films from compounds containing both the water-soluble and water-insoluble accelerators showed lowered modulus.

As to the third possibility, inaccuracies in measuring thicknesses, gauges obtained by weighing agreed closely with those obtained by actual measurement. Errors in thickness measurements are usually no greater than those due to die surface and tensile testing machine variations.

In the original paper I attributed the lower modulus to the "nature" and roughness of the porous plate films. Perhaps this should have been expanded to include loss of serum, roughness of surface, loss of water-insoluble accelerator, and inaccuracies in thickness measurements. I have shown here that the last two are not likely factors; that roughness of surface does account for at least some of the differences and that loss of serum is a still unevaluated factor.

Possibly it should be re-emphasized that none of the above discussion, as Dr. Stevens admits, affects the practical conclusion to be drawn from the work; that is, that water-soluble accelerators are not lost from rubber latex compounds when they are used on porous surfaces. Strictly speaking, of course, this applies only to the particular porous surface employed and to the manner in which it was employed.

I am very appreciative of the comments made by Drs. Stevens and Schidrowitz and hope that the above discussion will serve to clarify any misunderstandings which may have arisen.

Very truly yours,

H. H. ABERNATHY

Softeners for Government Synthetic Rubber

THE OFFICE of the Rubber Director, through Dr. H. E. Simmons, who heads up the so-called Educational Committee to disseminate information on synthetic rubber, recently announced a revision of its compounding information on softeners for Government Synthetic Rubber (GR-S). The complete text of the revised data follows herewith:

Although softeners may not have the same effect upon GR-S as upon natural rubber, nevertheless they are essential, and several good ones are now known. Here are some of the softeners that have been found to have merit; but it should be clearly understood that the omission of any material from this list does not mean that the material is unsuitable. The reader will readily understand that it is not possible to name all materials that are satisfactory, particularly when new ones are being offered rather frequently.

(1) Coal tar products and related products made from cracked petroleum. Example: Bardol. These products in general are good chiefly as plasticizers, not as tackifiers. Bardol tends to accelerate cure.

(2) Natural tars and resinous products. Examples: Pine tar, burgundy pitch (a mixture of rosin and paraffin oil), rosin, crude gum turpentine (the naturally occurring blend of rosin and turpentine), dipentene (a distillation product of turpentine). These products are good both as plasticizers and as tackifiers, and may be used either singly or in combination. They tend to retard cure.

(3) Petroleum products. Examples: Circo light oil, Paraflux, Stanolind No. 6 paving asphalt, Naftolen. Softeners or plasticizers. Neutral to cure, or tend to retard.

(4) Polymerized olefins. Example: Vistac. Plasticizer and tackifier.

(5) Brown substitute. Smooths stock and acts as an extender.

The dosage of softener required is usually in the range of 5-15 per cent based on the synthetic, but may be much higher in compounds heavily loaded with carbon blacks and other fillers.

Natural rubber in moderate proportions is beneficial for extrusion work and for imparting tack.

Reclaim is a good processing agent on the calender, but it is not particularly good as a tackifier. It is possible to compound reasonable proportions of reclaim with GR-S without undue sacrifice of physical properties.

No change in sulfur or accelerator is necessary when moderate proportions of natural or reclaimed rubber are used.

Memo on Protective Coatings for Tires

EVER since the rubber situation reached the drastic stage, hardly a week goes by but that some new paint or protective coating for tires, intended to extend the length of the tire or other rubber product, makes its appearance. Several of these coatings have considerable merit, but as a rule the general claims are greatly exaggerated. Some comments on these coatings were made in Letter Circular 709, issued by the National Bureau of Standards, as follows:

These paints and other protective coatings may serve to improve the appearance of tires and to protect the rubber from cracking and checking caused by sunlight and weather, but no products are known that will restore old rubber or increase the mileage of treads.

Materials offered for use on tires can be tested by applying them to alternate sectors of tires and comparing the treated and untreated areas after a reasonable mileage. A product to be worth testing on the road should form a waterproof, adherent film or should be absorbed by rubber.

It is recommended that tires having white sidewalls and the tires of unused vehicles exposed to the weather be painted for protection. When protection is needed against radial cracks or severe checking of the sidewalls a solution of an antioxidant and a sun-checking inhibitor should be applied. The large majority of tires, however, require no treatment beyond intelligent care and maintenance.

NUMBER **FIVE** OF A SERIES OF ARTICLES ON

Better Management for the Rubber Factory

V—RESERVES

By ARTHUR ROBERTS

BECAUSE there has been much discussion and advocacy of special reserves for costs and losses arising out of the war, many rubber factory managements are considering the adoption of such a policy and numerous queries have reached our ears; hence, this paper on reserves is apropos at this time.

In connection with our accounting commitments and field studies for RUBBER AGE, we have discussed many phases of business management, including the subject of reserves and find that, roughly, 80 per cent of the business managers in this industry are confused on this element of administrative operation, yet a majority of these executives supervise factories where the accounting system includes reserves. In other words, they lack adequate knowledge of an important costing factor, which tends toward inaccurate costing of production and losses on operation. If such confusion was a hazard before this emergency, obviously it is dynamite today when manufacturers are being urged to establish war reserves, estimating as near as possible the likely costs and losses for the duration.

Faulty Line of Reasoning

The statement of one rubber manufacturer of moderate size typifies the fog in which many are wandering. Said he, "We have $302,750 in reserves set aside. When you consider that we've been in business only 8 years, that nest-egg certainly deserves a crow-over. Besides, our net worth is $413,151, which shows that we haven't crippled our surplus by our policy of building up reserves ample to meet all contingencies." This manufacturer was following a faulty line of reasoning common to many others in this industry. He confused *reserves* with *funds.* There is a big difference, and at a time like this, when reserves are taking increasing importance in the maintenance of reasonable profits now and during the post-war period, rubber factory executives should make sure that they have the right slant on this problem.

A fund always represents cash or equally liquid assets. Reserves are always credit balances on the books, fund accounts are always debit balances. Reserves for depreciation, bad debts and other contingencies are merely bookkeeping entries to reflect certain conditions on the financial statement; hence, substantial reserves should never lull a rubber products manufacturer into a sense of false security because his business can go blitzkrieg even when the financial statement reveals that his plant has "soaked" away a fortune on paper.

More than one manufacturer in this industry has fooled himself thus, only to wake up too late. Came time when his machinery, building and other working assets needed modernizing. He hoped to realize this objective via the reserves listed on his balance sheet, but the cupboard was bare when he went there because his reserves were only paper figures, even though he had built them up with charges against actual profits.

Reserves and Financial Strength

Substantial reserves do not necessarily indicate financial strength. A manufacturer with substantial reserves may be weak otherwise. The ratio of current assets to current liabilities may be bad, too much money invested in fixed assets may beget heavy expenses, the working capital may be below par, supervision in general may be weak. Many things can be wrong with a rubber products manufacturer's business, even though his reserves are substantial on paper. A full tank of gasoline won't put a car in first-class mechanical shape. A manufactory is like a car in that it has many different operating elements, which must all be efficient and synchronize. Depending too much upon one phase of business management, such as the building up of substantial reserves on paper and disregarding other phases of managerial routine, is a "pathetic fallacy" often encountered in this industry.

Reserves are classified thus: (1) valuation or appraisal reserves, (2) liability reserves, (3) surplus or net worth reserves. Valuation or appraisal reserves concern depreciation and obsolescence, or both, of an asset, also bad debt allowances, amortization of leasehold rights, etc. This type reserve is set up to maintain conservative asset values. Each year a certain sum is set aside to effect the inevitable reduction in value that takes place because of wear, tear, age, obsolescence, and sometimes inventory losses caused by errors in processing, theft, damage, shrinkage and spoilage.

Valuation reserves should be deducted from the particular assets to which they apply on the balance sheet so that the analyst can get a quick picture of the actual total write-downs to the date of review and the net value of each asset. These reserves are built up through the cost or overhead expense and the charge-offs should be checked carefully today to make sure that they are adequate. With the speed-up of production, machines are wearing out faster; hence, depreciation charges should be increased, likewise, credits to reserve accounts. If insufficient to take care of actual wear and tear during this emergency, profits will be inflated and you will pay an excessive income tax. A check-over of the depreciation accounts in 12 rubber factories disclosed that all but one had *not* increased the credits to depreciation reserve accounts and that one recorded an increase of only 5 per cent, inadequate when one considered the big speed-up of production in this plant. Obviously, all of these plants are in for post-war headaches if they don't need aspirin before the duration has ended.

Definition of Liability Reserves

Liability reserves are concerned more with impendent expenses than the writing down of assets to show conservative values. They are written into the accounts when a liability exists and the amount at the time is not known. Income taxes, social security taxes, property taxes, state and Federal taxes, a possible loss in a civil suit (which may bring an unfavorable decision), a loss on a substantial loan or account, are liabilities for which reserves are opened. Liability reserves make provisions in advance for a sizable outlay soon to come and tend to equalize the burden over all months in the year instead of one month or a few years.

For example, taxes are definite expenses but not known until some time in the future or after the first of the year, sometimes six months after. Nevertheless, each month should carry a fair share of the tax burden; hence, a reserve for taxes may be set up at the beginning of the year, the estimate based upon the previous year's taxes and 1/12 of the amount charged to expense and credited to "Reserve for Taxes" each month. When the exact charges become known, this liability reserve is adjusted to agree with the exact amount of the tax and transferred to "Accrued Taxes," because it is then an accrued liability, no longer a reserve for taxes.

In reviewing the accounts of many rubber factories, we find that only about half have provided reserves for taxes in the past, and although this omission may have caused no concern to date, it should be obvious to the rubber industry that, today, with tax a major expense, the absence of a reserve for taxes may create a serious financial condition at the end of the year. The individual taxpayer is up against a similar problem and that is why Congress is considering means of getting the tax monthly out of pay envelopes or in another way. The liability reserve is usually short-lived compared to the valuation reserve. In most cases, it is closed out within the year or at the end of the year, then opened up again the next year. Liability reserves should appear on the liability side of the balance sheet as liabilities.

Surplus reserves are the tools of big business. They cover many purposes: the retirement of bond issues, hedging against a decrease in the market value of inventories (incidentally, this is a reserve that many are considering to cushion post-war deflation of inventories), reserve for expansion of business property or an extensive advertising campaign definitely decided upon to keep the name of a company's products in mind throughout the emergency even though the plant is working to peak capacity. A surplus reserve is set up to prevent payment of the entire surplus in dividends, accomplished by earmarking the needed portion for certain objectives. The surplus reserve is part of the net worth and shown in this section on the balance sheet. Valuation reserves concern assets usually, liability reserves ordinarily concern liabilities, contingencies or expenses, and surplus reserves make provisions for payments out of capital.

A war reserve may belong to any of these classifications—valuation, liability or surplus—but uncertainty as to the duration makes it difficult to fix such losses, even approximately in many cases. Yet, some attempt, say its sponsors, should be made to set up a reserve figure, which may be adjusted when costs and losses are later determined. Credits to a war reserve would be charged against income, thus reducing the net for the current period. If such losses are carried through the emergency without being recorded, they will eventually come up for handling after the emergency and must then be charged off in a lump sum or pro-rated during the post-war period when business at that time will, more than likely, have headaches enough without being burdened with losses chargeable to the emergency.

The situation simulates that of the rubber products manufacturer who does not write off any depreciation on his machines, then suddenly finds that he needs new machinery and writes off the old in one lump sum against current profits or surplus. Obviously, such action distorts the operating figures for the period burdened unfairly. One case we remember where a plant owner in this industry wrote off more on scrapped machines than he had made in the previous four years. In other words, he had been losing money for four years but didn't know it because his reserves for depreciation were inadequate.

Major Reasons for War Reserves

The major reasons for the establishment of war reserves are:

1:—To cover inventory losses experienced during the post-war period, should prices decrease drastically.

2:—For amortization of plant expansion.

3:—To accelerate depreciation of machinery as a result of all-out production and its operation by inexperienced workers.

4:—To accelerate obsolescence because of improved units brought out as a result of more intensive research during the war to increase mechanical efficiency.

5:—To replace damage done by armed forces or seizure by the enemy.

6:—For repairs and maintenance deferred because of all-out production. Such work will, obviously, be more costly later than if done immediately.

7:—To reimburse the exchequer for forced sales of equipment bought for the emergency that may not be used after the duration.

8:—For separation allowances or bonuses to employes who are discharged at the end of the war.

9:—To defray the expense of demobilizing a plant for peacetime production.

10:—To offset the decline in plant value due to the reduction in capacity, this reduction resulting from the decline in sales after the war.

It may not be necessary to open war reserves for all of these contingencies but the rubber products manufacturer must consider some of them. As yet, the Treasury Department will not allow the deduction of war reserves for income tax purposes, but business groups are urging the government to recognize provisions of this kind as deductions in the determination of taxable income because such a policy will tend to make taxable income more nearly reflect real income, inasmuch as these reserves are intended to give recognition to costs and losses related to the war period that are real, not imaginary, although in many cases they cannot be definitely measured at this time.

In the final analysis, remember that your reserves are paper figures, so do not bank too heavily on them until they are minutely analyzed for adequacy. An analysis of many balance sheets made during the past decade in this industry shows that 25 per cent were deficient financially despite substantial reserves. This does not mean that those rubber products manufacturers were insolvent but their financial condition was below par in one way or another and could be strengthened. Reserves are useful gadgets when all parts of the business machine are in good working order; otherwise, they are worth little more than the paper they are written on. They do not represent cash set aside for replacement of working assets nor do they signify that the credits were ever deposited in the bank or invested in securities.

Usually, only a fraction of yearly profit is in cash, the remainder being invested in materials, supplies, accounts receivable, new equipment and other assets; hence, reserves are built up with book transfers from profits without any exchange of cash. If the management sets aside actual cash to take care of depreciation, obsolescence and other contingencies, it is a "fund" and this is seldom practicable. If wisely handled, a management can use that money to better advantage in a business way.

The "sinking fund" is probably the most commonly known fund account and is created to retire a long-term liability at maturity. Cash is usually set aside and invested in securities to liquidate the liability at maturity. The redemption fund is similar to the sinking fund except that the former usually covers assets set aside for the retirement of obligations maturing serially. Then, there are building funds, perpetual care funds, etc., with which this industry need not be concerned very much, with the probable exception of the larger plants. It is important, however, to understand the difference between reserve and fund accounts so that they are accurately handled.

The reserve account is a factor in pricing. For that reason, the rubber products manufacturer should understand what it's all about. We have found that there is a definite, although indirect, connection between unprofitable pricing and the improper handling of reserves because in almost every case where the margins were inadequate, there were defects in the methods of computing reserves. It stands to reason that if the rubber products manufacturer does not make allowances when fixing prices for all permissible reserves that his over-all costs will not be computed properly, they will be too low; hence, prices will tend to taper perilously downward. Those who do not set up adequate reserves are also likely to be users of obsolete equipment because the purpose of depreciation reserves is to provide a yardstick to measure the wear, tear and age of working assets. Valuation reserves should be deducted from their respective assets on the asset side. This brings into sharp focus just what working equity is left in the assets.

The rubber products manufacturer should always try to preserve the earning capacity of the business investment and that can be safeguarded only by setting up a proper recording system, by accumulating a depreciation reserve account at a rate which reflects the velocity of obsolescence or depreciation, whichever is more rapid, by opening enough reserves to handle all contingencies. Obviously, at a time like this, the rubber products manufacturer may have to reconstruct his existing set-up on reserves and put them on a wartime basis. We suggest the adoption of such a policy if your business set-up demands it.

Falkomer — New Extender for Buna-Type Synthetic Rubber

A NEWLY-developed rubber-like compounding material, which finds application as an extender and plasticizer for the Buna-type synthetic rubbers, has been introduced to the rubber industry by the Thiokol Corporation, Trenton, N. J. At present, two types of Falkomer are available, in solid or liquid form, termed Falkomer 106 and 108, respectively. Compounders can best determine for themselves which of the two types are preferred for specific applications.

Falkomer 106 is described as "a copolymer of coal-tar derivatives and polyesters of unsaturated fatty acid glycerides, so treated as to render the two otherwise incompatible ingredients compatible." It is a viscous, sticky liquid, with a specific gravity of 1.05, and has a definite plasticizing effect on Buna N before vulcanization. It is capable of further polymerization and/or vulcanization. Falkomer 108 is a partially vulcanized elastic solid derived from a base quite similar to Falkomer 106. The principal difference between the two Falkomers lies in the fact that 108 is in a solid state and has less pronounced plasticizing and tackifying properties before vulcanization. Although Falkomer 106 has a slightly better extending action, 108 is easier to handle.

According to Thiokol, both types of Falkomer are compatible with the synthetic rubbers up to equal proportions, but for best extending action and physical properties it is recommended that not more than 25% replacement be considered. It is pointed out, however, that mill mixes containing 50% Falkomer in Buna N and reclaim have been handled successfully in the manufacture of a variety of products.

Abstracts of United States Patents on the Compounding and Use of Synthetic Rubber

By FREDERICK MARCHIONNA, M. S. Chem.

Part VIII

Patrick—U. S. Pat. 2,206,642—July 2, 1940. *Plastic Polyalkylene Polysulfide.* (Assigned to Thiokol Corp., Trenton, N. J.).

Polyalkylene polysulfides having a higher degree of chemical stability and greater resistance to many organic solvents are obtained by treating this plastic with 0.5% or less of tetramethyl thiuram disulfide, which can be added to the polysulfide plastic while in the form of latex, or in solution in organic solvents. In a specific example, the polyethylene polysulfide plastic (100) is admixed with crude rubber (5), zinc oxide (10), carbon black (25), diphenyl guanidine (0.35), stearic acid (0.5), and tetramethyl thiuram disulfide (0.5). The thiuram sulfide peptizer is milled into the crude rubber together with the accelerator, and then incorporated in the polysulfide plastic on the milling machine, whereby the batch softens quickly and facilitates the incorporation of the carbon black and zinc oxide therein.

Patrick—U. S. Pat. 2,206,643—July 2, 1940. *Polyalkylene Polysulfide Cements.* (Assigned to Thiokol Corp., Trenton, N. J.).

Adhesive cements of great strength which are resistant to oils, oxygen, and other chemicals are obtained from polyalkylene polysulfide plastics of the ether type, produced by reacting an alkali polysulfide with dichloroethyl ether or similar compounds, in the presence of colloidal magnesium hydroxide. In one example, a polyalkylene polysulfide of this type (500) is combined with zinc oxide (50) and tetramethyl thiuram disulfide (2) and dissolved in 1.2 trichloroethane, ethylene dichloride or dibromide, tetrachloroethane, carbon tetrachloride, di-, tri-, or tetra-chloroethylene, etc., in sufficient quantity to make 100 gals. of cement containing 5% of polysulfide plastic. The oxides of lead, bismuth, arsenic, chromium, or manganese can be substituted for the zinc oxide in the above example. In another example, the polyalkylene polysulfide (100), zinc oxide (10), stearic acid (0.5), a thiuram disulfide as peptizer (0.2), and carbon black (60) is cured for one hour at a steam pressure of 50 lbs., and the steam then released rapidly to form a spongy mass which dissolves quickly in any of the above solvents to form a 35% cement. In other examples, the cement is formed from disulfurized or oxidized polyalkylene polysulfide plastics. These cements can be used to join two glass plates, or for coating fabrics, fibre boards, etc.

Armor et al—U.S. Pat. 2,208,619—July 23, 1940. *Sealing Tapes and Gaskets.* (Assigned to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware).

A material in the form of tape, gaskets, etc., comprises a cloth impregnated with a polychloroprene which is coated with a rubber adhesive. Tape made of this coated sheet is particularly suitable as sealing tape for the overlapping edges of aluminum plates in the hull construction of seaplanes or for insulating the seams of railroad cars, tanks, etc. In one example, a lightweight print cloth is impregnated with a cement containing polychloroprene (48), pine tar (1.5), rosin (2), carbon black (5), whiting (33), magnesium oxide (5), zinc oxide (4), phenylbetanaphthylamine (1), and zinc chromate (5) in xylol (75). After evaporation of the solvent a layer of the same composition, containing less solvent, is spread on the fabric and both faces of the fabric are dusted with mica and coated with an adhesive rubber cement containing rubber (100), balata (100), burgundy pitch (200), rosin (200), cumar resin (200), and zinc chromate (100) in benzol with mica. On evaporation of the solvent the coated surfaces are dusted with mica. When the tape is to be used, the adhesive surface is activated by wetting with a solvent.

Nowak et al—U.S. Pat. 2,209,928—July 30, 1940. *Electrical Insulation.* (Assigned to General Electric Co., Schenectady, N. Y.).

An oil-resistant, electrical insulating material consists of polychloroprene and a polyacrylic acid derivative, such as polymethyl, ethyl, propyl, butyl acrylate, polyacrylonitrile, etc., together with curing agents for the polyacrylic acid compound and an absorbent filler, such as active carbon, active gas soot, active magnesium silicate, silica gel, activated alumina or bauxite, Fuller's earth, etc., with an inert filler, *e.g.*, talcum, chalk, etc. A suitable composition contains polychloroprene (50 to 500), a polyacrylic acid ester (500), absorbent filler (200), talcum (280), and sulfur (5). In a specific example, a wire conductor, which has been insulated with rubber and may have a fiber covering, is coated with a layer comprising polychloroprene (32 to 320), polyethyl acrylate (318), chalk (467), activated gas soot (195), and sulfur (2). According to the patent, the polyacrylic acid is vulcanized with sulfur to render the insulation oil resistant, the activated absorbent powder acting as a sort of catalyst in such vulcanization.

Bernstein—U.S. Pat. 2,210,748—August 6, 1940. *Oil Seal Diaphragm.* (Assigned to Victor Manufacturing & Gasket Co., Chicago, Ill.).

An oil seal diaphragm or gasket particularly adapted for sealing the spaces between moving parts, such as a shaft and its surrounding structure, is composed of a molded mixture of leather fibre and polychloroprene previously compounded with curing agents. A suitable material for this purpose comprises polychloroprene (100), magnesia (10), antioxidant (1), rosin (5), zinc oxide (10), sulfur (1), and leather fibre (100 to 200, preferably 150). This mixture is worked uniformly and then sheeted to the desired thickness. The formed sheet is then coated with a flexible resin, *e.g.*, phenol-aldehyde, urea-aldehyde, or alkyd resin, cumar resin, etc. A diaphragm can be molded from this prepared sheet. The wiping surface of the diaphragm may be loaded with graphite for the purpose of reducing the friction of the sealing lip in its wiping contact with the rotating shaft.

Cunradi et al—U.S. Pat. 2,211,429—August 13, 1940. *Elastic Product.* (Assigned to Jasco, Inc., Baton Rouge, La.).

Elastic products are produced by working a hard organic plastic material having a foam-like structure with an elastic binder from the group consisting of hydrogenated rubber, polybutadiene, polyisobutylene, polyvinyl compounds, etc. The hard, foamy plastic may be from urea-aldehyde, phenol-aldehyde, polystyrene, etc., all of which are rendered foamy by incorporating blowing agents or by agitation with gas, etc. Thus, polyisobutylene, polybutadiene, etc. (70), having a molecular weight of about 140,000, is milled with a disintegrated urea-aldehyde foamy brick as described in U. S. Pat. 2,076,295. The uniform mixture is then drawn or molded into plates or other form. About 35 parts of rosin may be incorporated in this composition. In another example, a polybutadiene latex or natural latex (100) is worked with the urea-aldehyde foamy powder, together with zinc oxide (5), sulfur (3), accelerator (2.5), and antioxidant (1), and the mixture cured at 127° C. for one and one-half hours.

Safford—U.S. Pat. 2,211,608—August 13, 1940. *Electrical Insulation.* (Assigned to General Electric Co., Schenectady, N. Y.).

This is a modification of U. S. Pat. 2,118,017 for obtaining an electrical insulating material having low dielectric loss and lower power factor at high temperature. The modified insulating material consists of a polychloroprene, lead oxide, and finely divided carbon black in proportions of 57%, 35%, and from 8 to 12%, respectively.

MacDonald—U.S. Pat. 2,212,611—August 27, 1940. *Adhesive Cements.* (Assigned to Boston Blacking & Chemical Co., Boston, Mass.).

This is an improvement over the polychloroprene cement of U. S. Pat. 2,163,611. The improvement consists of incorporating in the chloroprene cement a zinc chloride double salt of phenylhydrazine or a colloidal dispersion or suspension of the polychloroprene. In one example, the deodorized polychloroprene of U. S. Pat. 2,067,854 is first milled with three-quarters of the required quantity of the zinc chloride double salt of phenylhydrazine together with three-quarters of the quantity of magnesium oxide plus one-half of the amount of monoethanolamine and all of the zinc oxide. Another batch is made containing the remaining half of the chloroprene and the remainder of the phenylhydrazine salt, monoethanolamine, and magnesium oxide. These batches are sheeted, cut into small pieces, and dissolved in 34 gallons of equal volumes of benzene and trichlorethylene to form a solution cement containing polychloroprene (90), magnesium oxide (9.1), zinc oxide (4.6), sulfur (2.7), monoethanolamine (3), 88% diethylamine (2.3), benzene (125), and trichlorethylene (207).

Crawford—U.S. Pat. 2,213,954—September 10, 1940. *Vulcanized Polychloroprene.* (Assigned to the B. F. Goodrich Co., Akron, Ohio).

The curing of polychloroprene articles is retarded by incorporating in the compounded polymer from 1 to 10% of an acid substance from the group consisting of maleic acid and anhydride, phthalic acid, tetra hydro phthalic anhydride, metallic maleates and phthalates of Na, K, Ca, Ba, Sn, Mn, Pb and Fn. Polychloroprene mixtures containing this retarder will cure well at 287° F. for 45 minutes. In one example, there is used neoprene (100), magnesium oxide (10), phenyl-beta-naphthylamine (2), carbon black (100), rosin oil (10), litharge (10), maleic anhydride (3) or maleic acid (3.6) or phthalic acid (5.1) or tetra hydro phthalic anhydride (4.7). In these compositions the litharge can be replaced with 9.9 parts of lead maleate or 11.4 parts of lead phthalate, in which case the lead compound will act as both curing and retarding agent of the vulcanization.

Ott—U.S. Pat. 2,214,934—September 17, 1940. *Vulcanized Polychloroprene.* (Assigned to Hercules Powder Co., Wilmington, Delaware).

In a method of curing polychloroprene, with or without a quantity of natural rubber, the polychloroprene is reacted with a hydrosulfide from the group consisting of hydrogen sulfide, ammonium, sodium and potassium hydrosulfides, in the presence of a catalyst, including sulfuric or phosphoric acid, paratoluene sulfonic acid, potassium or calcium hydroxides, ethanolamine, amylamine, pyridine, zinc or tin sulfides, activated carbon, etc. A mixture of phosphoric acid and silica gel is a very effective catalyst for the reaction. In one example, a chloroprene rubber sheet one-half inch in thickness is placed in an autoclave and treated with hydrogen sulfide under a pressure of 250 to 300 lbs./sq. in. overnight at room temperature to cure the polychloroprene. Any non-reacted hydrogen sulfide is removed in a vacuum dessicator containing sodium hydroxide for several days to obtain a polychloroprene containing 1.4% of combined sulfur. In another example, a 5% solution of polychloroprene (100 gr.) is placed in an autoclave with 75 cc. of 85% phosphoric acid as catalyst and treated with hydrogen sulfide at room temperature at a pressure of 300 lbs./ sq. in. Further treatment as above results in a polychloroprene containing 2.5% of sulfur. In still another example, a compounded polychloroprene containing polychloroprene (200), cumar resin (13.6), carbon black (166), whiting (200), and zinc oxide, magnesium oxide, stearic acid and an antioxidant, all in small quantities, is treated with hydrogen sulfide as in the first example. In other examples the treatment is carried out on compounded mixtures of polychloroprene and rubber.

Patrick—U. S. Pat. 2,216,044—September 24, 1940. *Plastic Polyalkelene Polysulfides.* (Assigned to the Thiokol Corp., Trenton, N. J.).

This patent claims the production of a polyalkelene polysulfide plastic of the ether type obtained by reacting an alkali polysulfide with B.B'-dichloroethyl ether in which the ether may contain also a benzene or naphthalene ring. But it also discloses that a cured polysulfide plastic of the ether type containing a benzene ring substituent has properties radically different from the ordinary ether type plastic containing no such substituent. Thus, when two compositions consisting of zinc oxide (10), stearic acid (0.05), carbon black (60), benzothiazyl disulfide (0.25) and paradichlorobenzene-sodium polysulfide reaction (100) in one case, and ethylene dichloride sodium polysulfide reaction (100) in the other case, are cured at 300° F. for one hour, tests show that the polymer from ethylene dichloride with a tensile strength of 650 lbs./sq. in. has an elongation of 500% and a bad odor, while the polymer from paradichlorobenzene with a tensile strength of 3000 lbs./sq. in. has an elongation of 10% and is odorless or has a pleasant odor.

Brandt—U. S. Pat. 2,216,485—October 1, 1940. *Emulsifying Agents.* (Assigned to Colgate-Palmolive-Peet Co., Jersey City, N. J.).

Although this patent covers a cosmetic cream made by the use of a sulfonated mineral oil extract dissolved in liquid sulfur dioxide, it also describes the use of this new wetting and emulsifying agent for many different purposes. The preparation of the sulfonated oil is described in U. S. Patents 2,149,662 and 2,179,174. Thus, a naphthene base crude is treated with liquid sulfur dioxide, with or without benzol, preferably a phenol, and then sulfonated. A stable polychloroprene latex is obtained by adding the chloroprene slowly to an equal part of 1% aqueous solution of the ammonium mineral oil sulfonated, with agitation, and the resulting emulsion allowed to stand at 10° C. from 24 to 48 hours to produce a polychloroprene latex to which there is added 1% of phenyl-beta-naphthylamine in the form of aqueous solution containing the sulfonated mineral oil. The stable latex thus obtained can be used for coating or impregnating articles.

Patrick—U.S. Pat. 2,218,176—October 15, 1940. *Preventing Static Electricity.* (Assigned to Thiokol Corp., Trenton, N. J.).

The static electricity generated when silk, cotton, wool, paper, leather, metal, rubber, glass, etc., rub over rods or in guides is eliminated by making these rods or guides of a rubber-like plastic material obtained by reacting a soluble alkali polysulfide with an organic compound having the general formula

$$X.CH_2—R—CH_2.X^1$$

in which X and X^1 are monovalent negative elements and R is a divalent element capable of existing in stable combination with two symmetrically arranged methylene groups, so as to produce a polymer of high molecular weight having a long chain structure represented by

—S—S—R—S—S—R—S—S————R—S—S—.

In the example given, the polysulfide plastic is obtained by reacting symmetrical dichloroethyl ether with sodium tetrasulfide.

Martin—U.S. Pat. 2,219,550—October 29, 1940. *Flexible Products.* (Assigned to Thiokol Corp., Trenton, N. J.).

Non-slippery floors, or similar articles which will be resistant to oils and corrosive chemicals, and have good heat and electrical insulating properties, are obtained by binding particles of cork, leather, rubber, wool, cotton, silk, etc., with a polyalkylene polysulfide plastic in the form of latex or in solution in organic solvents. In one example, disintegrated rubber waste in the form of dust (200) is admixed with the polysulfide obtained by reacting ethylene dichloride with an alkali polysulfide (400) in the form of solution. On evaporation of the solvent, the mass is integrated by pressure in a mold at 287° F. for 3 minutes. In another example, 50 parts of cork powder is wetted with a solution of the polysulfide plastic; the solvent is evaporated, and the coated cork powder mixed with 15 parts of polyethylene polysulfide plastic, in the form of powder, and molded as above. Or 50 parts of ground cork are mixed with 80 parts of the polysulfide plastic and the mixture integrated in a mold, under high pressure, at 298° F. for 5 minutes.

Patrick—U. S. Pat. 2,221,650—November 12, 1940. *Polysulfide Molded Products.* (Assigned to Thiokol Corp., Trenton, N. J.).

Polyalkalene polysulfide plastics can be molded quickly and effectively by using a polymer having the structure

$$H—S—R—S_x—R————S_x—R—S—H$$

in which R is an organic radical and X in S_x is from 2 to 6. The preparation of this type of polymer from B-B¹-dichloroethyl ether and sodium tetrasulfide in the presence of colloidal magnesium by hydrozide, or by disulfurization of the ordinary polymer with sodium hydroxide or oxidation is described in detail. In the example given, the polyalkalene polysulfide (100) is mixed with zinc oxide (10), carbon black (60), stearic acid (0.5), and Altax (0.25), sheeted, and heated at about 300° F. for one hour. The cooled heated mass is disintegrated and the powder placed in a mold and heat pressed for 2 to 10 minutes to obtain a strongly coherent molded article which can be removed from the mold without cooling. The importance of the invention lies in the fact that these polymers can be cured partially and then reformed into sheets or molded articles by merely placing the semi-cured mass in a mold and heat pressing them in a relatively short time.

Browne—U.S. Pat. 2,226,541—December 31, 1940. *Polychloroprene Cements.* (Assigned to B. F. Goodrich Co., Akron, Ohio).

An adhesive cement containing natural rubber and polychloroprene is obtained by dissolving rubber in gasoline, separately dissolving the polychloroprene in an alkyl ester of a lower fatty acid (the alkyl of which contains from 4 to 5 carbon atoms and the acid having no more than 5 carbon atoms), and then mixing the two solutions, thereby obtaining a perfect and homogeneous solution cement. The neoprene solvent may be isopropyl, butyl or amyl acetates, butyl propionate or butyrate, etc. The proportions of neoprene and rubber solutions may vary from 20:80 to 80:20 without danger of precipitating any of the solid polymers. In the example given, neoprene (41.8), magnesium oxide (2.1), gas black (42.9), cumar resin (8.35), rosin oil (4), and phenyl-beta-naphthylamine (0.85) are dissolved in butyl acetate to form a solution of any desired concentration. The rubber cement comprises natural rubber (61.15), gas black (22.2), zinc oxide (2), sulfur (2), accelerator (0.4), and antioxidant (0.5) dissolved in gasoline. The two solutions are mixed in any desired ratio.

NOTE ON FOREIGN PATENTS

Practically all of the patents originally issued and/or assigned to companies or individuals in enemy or enemy-occupied countries have been vested in the Alien Property Custodian of the United States. Anyone interested in using or exploiting any of the synthetic rubber patents abstracted in this series by Frederick Marchionna is urged to communicate his interest to the Office of the Alien Property Custodian, Washington, D. C. This applies only to those patents issued and/or assigned to companies or individuals in enemy or enemy-occupied countries, which may be determined by the names and addresses shown in connection with each abstract.

Smyser—U.S. Pat. 2,226,590—December 31, 1940. *Electrical Insulation.* (Assigned to Standard Oil Development Co., New York, N. Y.).

An electrical conductor of any type—stranded, cabled, etc.—is insulated by coating with a rubber in which there is "intercellularly" dispersed a polyisobutylene having a molecular weight from 2,000 to 15,000, or an elastic polymer having a molecular weight from 50,000 to 300,000. The rubber used may be natural rubber or polybutadiene, polychloroprene, etc., or a mixture of the synthetic and the natural. The natural or synthetic rubber, or mixtures thereof, is cut into small pieces and allowed to swell in a solution of the polyisobutylene in gasoline or other solvent to form a swollen gel from which any non-absorbed liquid is removed by decantation or filtration, thereby obtaining a swollen mass containing from 30 to 95% of the polyisobutylene (or preferably from 50 to 75% of the polyisobutylene) and the balance the rubber material. From 10 to 15% of paraffine or other wax and small quantities of vulcanizing agents may be incorporated in the swollen mass. The coating can be applied by extrusion or other methods.

Habgood et al—U.S. Pat. 2,227,900—January 7, 1941. *Bonding Rubber to Polybutadiene.* (Assigned to Imperial Chemical Industries, Ltd., London, England).

Butadiene rubber is bonded to natural rubber or other bases by means of an adherent coating containing a vulcanizable butadiene rubber. In one example, a vulcanizable tire tread stock is coated with a solution or an aqueous dispersion comprising polyisoprene (100), carbon black (50), sulfur (3.5), zinc oxide (5), stearic acid (4), and accelerator (1), and a sheet of an interpolymer, obtained by polymerizing 65 parts of butadiene with 35 parts of acrylonitrile (100), zinc oxide (10), carbon black (50), sulfur (1), stearic acid (1), and accelerator (1), superimposed thereon, the assembly being

subjected to heat and pressure at 141° C. The faces of the interpolymer to be jointed to the rubber may be wetted with a benzene solution and a sheet of the bonding layer placed therebetween, the assembly being cured as above. In another example, the bonding layer is a sodium butadiene rubber which is applied over the natural rubber sheet, and a layer containing natural rubber and the interpolymer, obtained by polymerizing 72 parts of butadiene with 28 parts of methyl vinyl ketone, pressed and cured thereon. A printing roll containing the synthetic rubber as a surface layer can be made by this method.

Allison—U.S. Pat. 2,229,880—January 28, 1941. *Abrasive Products.* (Assigned to the Allison Co., Bridgeport, Conn.).

This patent deals with the ordinary way of making abrasive wheels, etc., in which the binder for the abrasive is a Buna-type rubber. Thus, in one example, the wheel is molded from a mixture containing Perbunan (10), rosin oil (0.5), tricresyl phosphate (0.5), sulfur (5), aluminum oxide abrasive grains of 150-mesh (60), and filler (24). This mixture is milled, sheeted and cured at 140° to 190° C. In another example, the mixture comprises Perbunan (10), phenol-aldehyde resin (2), rosin oil (0.5), sulfur (5), acetone (30), chloroform (30), and aluminum oxide grains (82.5), which is treated as above.

Ewart—U.S. Pat. 2,230,138—January 28, 1941. *Vulcanized Products.* (Assigned to U.S. Rubber Co., New York, N. Y.).

Inflatable articles from latex of natural or synthetic rubber are produced with vulcanized portions having varying elastic modulus. Thus, a form for a bathing cap is dipped in a compounded natural latex or Buna N latex, and after a deposit of the required thickness is obtained the latex is coagulated. The differently vulcanized portions of the article may be effected in various ways: (1) By having the different parts of the deposit contain different sulfur contents; (2) Treating selected areas of the deposit with an accelerated solution; (3) Treatment with zinc laureate or stearate; (4) By treating selected parts of the deposit with an inactivator of vulcanization; (5) By treating selected portions of the deposit with paraffine wax and curing the whole article with sulfur chloride. The edge portions of a bathing cap or the annular rings in toy balloons, etc., may be treated in this manner. The same effect may be obtained by painting these parts with an alcoholic solution and 80% acetic acid (1:1), the resulting solution reducing the effects of the accelerator, or by treating them with an aqueous suspension containing 20% sulfur and 30% clay. In a specific example, the article is produced from a chloroprene rubber latex containing zinc oxide and sulfur. Portions of this article having different modulus of elasticity are secured by heating pre-determined surface areas with zinc dibutyl dithio-carbamate or with a solution of sodium dibutyl dithio-carbamate. These areas may also be treated with sodium silicate, pine oil, or tricresyl phosphate.

Imperial Chemical Industries, Ltd.—U.S. Pat. 2,231,623—February 11, 1941. *Vulcanized Butadiene Interpolymers.*

Interpolymers of butadiene compounds with esters of beta (2-furyl) acrylic acid are obtained in the form of aqueous dispersion which, after coagulation with ethyl alcohol, washing with water, and drying, are compounded with vulcanizing agents and cured to obtain tough, elastic products. In a specific example, the solid interpolymer (100) is admixed with gas black (50), zinc oxide (10), stearic acid (2), sulfur (10), mercaptobenzothiazole (1), and antioxidant (1), and the composition heated at 141° C. for one hour to produce a tough vulcanizate which is resistant to oils and other solvents.

Merrill—U.S. Pat. 2,231,769—February 11, 1941. *Treating Rubber Mountings.* (Assigned to U.S. Rubber Co., New York, N. Y.).

Rubber used for supporting loads or for preventing transmission of vibrations from the load to the support, etc., is heated uniformly between 160° to 260° F. from one to two hours and then allowed to cool at normal temperature, thereby relieving any stress in the mass. Natural or polychloroprene rubber can thus be treated. In one example, a mixture comprising polychloroprene (100), carbon black (1), zinc oxide (10), vulcanization retarder (10), rosin (10), antoxidant (1.5), sulfur (1), pine tar (13.5), softener (20), and filler (15), is placed as a cap on an article support. This cap is subjected to a load so as to stretch at 150% and while so stretched is heated in boiling water for 2½ hours to acquire a permanent set of 90. When stretched to 300% and the same procedure followed the cap will have a permanent set of 150%.

Savage—U.S. Pat. 2,235,536—March 18, 1941. *Electrical Insulation.* (Assigned to General Electric Co., Schenectady, N. Y.).

An electrical conductor is insulated with an ozone-resistant and corona-resistant rubber, a polyisobutylene, and factice, with or without polychloroprene. When polychloroprene is used, the insulating material comprises natural rubber (19), polyisobutylene (13), polychloroprene (3), factice (47), zinc oxide (12), litharge (3), magnesium oxide (0.5), sulfur (1), wax (1), and antioxidant (1). The polyisobutylene should preferably have a molecular weight of 30,000 to 40,000. This insulating material may be applied to the conductor by extrusion or in the form of solution or aqueous dispersion.

Patrick—U.S. Pat. 2,235,621—March 18, 1941. *Vulcanization Process.* (Assigned to Thiokol Corp., Trenton, N. J.).

Natural or synthetic butadiene rubbers are vulcanized solely by heating the rubber with 5 to 7.5% of polyethylene sulfide plastic having a formula

$$(-C\text{————}C-S_{3\text{ to }9})$$

where the C————C carbon atoms are joined to and separated by an intervening structure and where the formula is produced by reacting sodium tetrasulfide with beta-beta dichlorethyl ether in the presence of magnesium chloride. Thus, a polychloroprene is vulcanized by mixing polychloroprene (100), Thiokol ether as above (5), magnesia (5), zinc oxide (10), carbon black (35), cotton seed oil (10), and heating the material to the proper temperature. Or, polybutadiene (100), Thiokol ether (5), carbon black (40), zinc oxide (10), cotton seed oil (10), and pine tar (2 to 3), is mixed and heated at 307° F. for four hours to obtain a vulcanizate of great elasticity and tensile strength.

Walker—U. S. Pat. 2,238,141—April 15, 1941. *Stabilizing Cellulose Fibres.* (Assigned to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware).

In a method of stabilizing cellulose fibre sheet treated with polychloroprene, a fluoride capable of reacting with hydrochloric acid, present or formed in the polychloroprene, is incorporated in the polymeric chlorobutadiene, and the fibre then impregnated or coated with the polychloroprene composition. The fluoride used may be sodium or potassium fluorides, lead fluoride, ammonium fluoride, or the fluorides of Ce, Li, Ag, Sb, Sn, etc. In one example, a polychloroprene coagulated from a latex thereof, and containing 1% of each of phenyl-beta-naphthylamine and tetramethyl thiuram disulfide, is compounded with 10% of each of rosin, magnesium and zinc oxides, and 10% of sodium fluoride incorporated therein, and the compounded polychloroprene dissolved in 900 parts of benzene for each 100 parts of the mixture. A bleached coated fabric when treated with this cement and dried at 125° C. remained flexible after aging at 125° C. for 183 hours. In another example, a polychloroprene latex is treated with 1.25% of ethyl-beta-naphthylamine, plus 1% diphenyl paraphenylene diamine, 1% of C-cetyl betaine, and varying quantities of various fluorides, and cotton fabrics or rayon fabrics impregnated therewith to obtain stable, waterproofed and oil-proofed fabrics. Paper and cardboard may be similarly treated. In still another example, a cotton fabric is first treated with lead fluoride, or similar fluorides, dried, and then coated with a polychloroprene latex and dried to obtain a stable coated cellulose fabric.

(To Be Continued)

Editorials . . . . . .

The Battle of Priorities

ALTHOUGH many people may not agree with his methods, few will deny that Rubber Director William Martin Jeffers seems to get what he goes after. And he is after sufficient equipment and materials to get the synthetic rubber program to the point whereby next Fall its productive capacity will be equal to that called for in the recent report of the Baruch Committee. It is no secret that this report is Mr. Jeffers' "bible" and he seems to be quite religious where his duties are concerned. If the rubber program has to be "bulled through," as intimated by the Baruch report, than "bulled through" it will be—no matter whose toes may be stepped on in the process.

Mr. Jeffers makes headline news these days, but we believe his intentions are grossly misunderstood, particularly by feature writers who need "news." In his recent demand for more top priorities (which means AAAA preference ratings), the Rubber Director was accused of wanting to delay the other "must" war programs — aviation gasoline, escort vessels, merchant ships, etc.—in order to make certain that the synthetic rubber facilities would be completed on schedule, thus putting a feather in his cap as a capable and efficient official. Based on his own analysis of the situation, Mr. Jeffers feels, and probably rightfully so, that the synthetic rubber program can be completed *along with these other programs* if the question of priorities is correctly handled.

There seems to be little doubt that the main reason why the Army and Navy fight Mr. Jeffers tooth and nail over his continuous requests for higher priorities is that in the belief of the military officials he is far too lenient with the public where rubber is concerned, although the man in the street would consider that statement a paradox. The Rubber Director is accused of being too liberal with commercial cars, cars used by salesmen, hauling trucks, and especially the big intercity busses, which are still permitted to use the finest, extra-large tires. The pending decision to enable all motorists to secure reclaim recaps without certificates or inspection will not allay this criticism in any way.

According to statements recently attributed to both Rubber Director Jeffers and his chief, WPB Chairman Donald Nelson, the decision of high Administration officials to give top priorities to 43.6% of the synthetic rubber program is sufficient assurance that this country will have enough synthetic rubber production facilities under way by next Fall to avoid the threatened gap in supplies. Should any contingency arise to forestall such facilities, we can all rest assured that Mr. Jeffers will again arise in public meeting—with or without OWI approval—to speak his little piece.

Order on Recapping

AT THIS WRITING, an order is being prepared, for issuance about March 1, which will enable motorists to get their automobile tires recapped with reclaim camelback without restrictions. Under present procedure, a person wishing to have a tire recapped must have it inspected and the proposed recapping approved by the tire inspector, after which he goes to his local rationing board to secure a certificate to present to the recapper. The certificate may or may not be issued by the board, depending on what use has been made of the monthly quota alloted to the board.

Although we agree with the many who believe that the present procedure is annoying to most motorists and could be greatly simplified, we feel that the complete removal of restrictions for recaps is a mistake, since, no matter how carefully the rubber authorities explain the move to the public, that public will use it as an example to prove that the rubber crisis is over. Although the terms "reclaim," "crude," "synthetic", and "substitute" are singularized by the industry, the public groups them all in thought under the single term of "rubber." True, there is an abundance of reclaim at present, but it should be considered as valuable "insurance" in the event the synthetic program is impeded by some unforeseen contingency.

CURRENT NEWS OF THE MONTH

SYNTHETIC RUBBER PROGRAM ASSURED AS OFFICIALS REACH PRIORITIES DECISION

AS REPORTED in the previous issue, the question of top priorities for the synthetic rubber program was under consideration by James F. Byrnes, Director of Economic Stabilization, acting as an agent for President Roosevelt, to whom the problem was posed by Donald Nelson, WPB Chairman. Top rating of 43.6% was finally given to the program on January 29. Before a decision on these priorities was handed down from the White House, Rubber Director William M. Jeffers touched off an explosive blast in a speech made in Baltimore on January 25 before the Council of State Governments during which he demanded that "the Army and Navy and these loafers" be kept out of war plants to permit the managers of the plants to "get out the production we need." He identified the "loafers" as "so-called expediters," commissioned officers of the Army and Navy, and asserted that "we have too many experts in Washington."

Admitting that we need more 100-octane gas and more escort vessels, Mr. Jeffers insisted that his point was that "we can get them all and still build the rubber plants we need, if we'll get production in this country up to where it ought to be." He added that this does not mean more men in the plants, "but it does mean more production and less interference in the plants." Subsequently, Mr. Jeffers explained that his reference to Army and Navy expediters in the war plants as "loafers" did not mean they were lazy but just unnecessary.

A few short hours after this talk was delivered, the Office of War Information, which clears talks given by Washington officials, issued a statement to the effect that the OWI did not clear the speech Mr. Jeffers delivered "nor did it have any advance knowledge that he (Mr. Jeffers) was to deliver such a speech." Advised of this statement, the Rubber Director replied that, "I was asked what was holding up the rubber program, so I told them." He declared that he spoke only for himself, not for Donald Nelson, and added that, "I've got to keep rowing with somebody to get the rubber program through."

Charges Are Investigated

On January 26, one day after Mr. Jeffers raised the cry of "loafers," the House Committees on Naval Affairs and Military Affairs voted to conduct a joint inquiry into his charges. Representative Thomason (Texas) was named chairman of a special joint investigating committee. In announcing the holding of open hearings, Chairman Thomason stated that, "We have no interest in the synthetic rubber program, except as members of Congress who wish Mr. Jeffers well, and will give him our complete backing. However, we are charged with the duty of seeing that the Army and Navy do a good job."

At the first hearing, held in Washington on February 1, Robert Patterson, Under-Secretary of War, told the joint committee that the Rubber Director had attempted to push through first portions of his own projects that would have delayed the high-octane aviation gasoline program four months and caused a loss of production of 15,000 planes. James V. Forrestal, Under-Secretary of the Navy, supported this testimony and added that the 55% allocations of vital equipment, instruments and materials which had originally been made to the synthetic rubber program "would cost us definite things" but that if the priorities set by Director of Economic Stabilization Byrnes were carried out with careful scheduling, the damage done to the Army and Navy programs could be "minimized." (These priorities are discussed later.)

Both under-secretaries stressed the fact that the equipment, instruments and materials required for the synthetic rubber plants now building or projected were needed also for the production of 100-octane gasoline, for planes, and for the rapid construction of escort vessels to meet Germany's increased submarine warfare. Blunt and sweeping denials were entered to Mr. Jeffers' "loafer" charge, Mr. Patterson declaring that the charge was founded "not upon truth but upon an irritation."

Appearing before the committee at the same time, Rubber Director Jeffers stuck to his guns and insisted that "expediters" from the Army and Navy were "taking over production methods" in war plants and were "telling the manufacturers how to run their jobs." He further alleged that the Army and Navy were moving to obtain authority over the domestic economy and read excerpts from letters written by Mr. Patterson and Mr. Forrestal recommending rigid restrictions on the use of private and commercial vehicles and on distribution of crude rubber to conserve the existing stockpile.

(EDITOR'S NOTE: Spokesmen for the Office of the Rubber Director revealed on February 13 that the country's rubber stockpile is holding up better than predicted by the Baruch Committee. Savings of approximately 40,000 tons in the final six months of 1942, compared with committee estimates, it was said, was too small to be a major factor in solving the rubber problem. At the end of 1942, it was revealed, the stockpile amounted to approximately 420,000 tons.)

The charge that the Army and Navy was endeavoring to control the domestic economy was vigorously denied by Mr. Patterson both for himself and for Mr. Forrestal. He complained that Mr. Jeffers had read only a part of his letter and then read it in full, revealing that he had urged a seven-point program including prohibition of Sunday and holiday passenger driving except for most essential purposes, limiting of commercial truck movements to absolute essentials, stoppage of long distance truck and bus lines, government purchase of the fifth or spare tire on passenger cars, and the purchase of passenger cars themselves in excess of 20,000,000.

Other Witnesses Heard

Included among other witnesses heard by the joint House committee investigating Mr. Jeffers' charges, were Vice-Admiral S. M. Robinson and Major General L. D. Clay, the latter assistant chief of staff of the War Department's Service of Procurement, both of whom appeared on February 2.

Vice-Admiral Robinson stated that the order giving top priorities to the synthetic rubber program was "without doubt the most drastic, not to say brutal, order that has been issued by the War Production Board." He stated that the order already has interfered with deliveries of naval material. He also added that the Navy's attitude was that the rubber, aviation, ship and munitions programs "should be placed on a parity." Major General Clay stated that while the Army had "a very keen interest in this rubber program since its beginning," it had objected to the directive placing that program ahead of all other programs.

The special committee wound up its investigation on February 10 with a report recommending that production of synthetic rubber should be coordinated with five other "must" programs for proper distribution of materials, component parts, and manpower. The only new factor about this recommendation, which was largely a repetition of a recommendation made a few days earlier by WPB Chairman Nelson, was that the committee included just about everything a land army might need as competitive with rubber production.

In answer to the charge made by Mr. Jeffers that he could not get a priority order that "sticks," the report stated that it had been determined that WPB has "full authority to determine the conflicting claims of the various agencies." "While the committee appreciates the splendid accomplishments of Mr. Jeffers and is sympathetic with many of his contentions," the report stated, "it nevertheless feels that the rubber program, as an over-all effort, must be placed in proper relation to the five other 'must' programs."

Decision on Priorities

In the meantime, the "battle of priorities" continued apace. On January 26 WPB Chairman Nelson revealed that he had asked the White House to umpire a controversy between himself and Rubber Director Jeffers over the extent of the synthetic rubber program. He stated that he had issued directives for the highest priorities on plants and facilities (AAAA) sufficient to produce 55% of the annual output of synthetic rubber recommended in the Baruch Committee report. Mr. Jeffers, he said, was demanding immediate construction of 65 to 70% of the capacity recommended in the report.

Testifying before the Senate Agricultural Subcommittee, headed by Senator Gillette, which has been investigating the synthetic rubber program for several months, Mr. Nelson said the controversy began last December when Mr. Jeffers told him that rubber plants were being delayed. After conferring with members of his staff, Mr. Nelson then issued directives providing for 55% of the capacity recommended. These directives were submitted to Army and Navy officials who refused to approve them by ignoring them, and they were made effective without military approval.

The reason he stressed construction to produce 55% of ultimate capacity, Mr. Nelson said, was because he believed that any additional emphasis on the rubber program would detract from some of the other four "must" programs—100-octane gasoline, escort vessels, airplanes, and merchant ships. Mr. Jeffers contended, however, that additional rubber facilities could be completed without interfering with these other programs. Accordingly, Mr. Nelson referred the matter to the White House.

Shortly after Mr. Nelson clarified his stand in the matter, it was learned that an offer by the Army and Navy to cut military uses of crude rubber by 15% during the remainder of 1943 had been rejected by Rubber Director Jeffers, although, it was claimed, the cut would divert sufficient crude rubber from the stockpile to offset the lag in production occasioned by the temporary shortage in component parts needed for the synthetic rubber program. The offer was said to be proferred to the Rubber Director in the form of a counter-proposal to his demand that top priorities be extended to cover from 65 to 70% of the entire program.

Failure of the Rubber Director to make the most advantageous use of his priority powers to bring key synthetic rubber plants into immediate operation was cited as one of the principal factors holding up the synthetic rubber program by one of the procurement officials, according to newspaper reports, although the official or his office was not identified. This official is reported to have charged that the butadiene plant at Institute, West Virginia, would be in operation today if Mr. Jeffers exercised his priority rights for the single plant instead of spreading his authorized priorities over the entire program.

Final Decision Handed Down

The controversy was finally settled on January 29, when high Administration officials, apparently acting on a recommendation made by Director of Economic Stabilization Byrnes, ordered top priorities funneled into a limited number of rubber plants, authorizing AAAA ratings for somewhat less than half the over-all synthetic rubber program. The top rating, it was reported, would be given to approximately 43.6% of the program.

There has been considerable misunderstanding, particularly in the lay press, as to the interpretation of this percentage. It is reported on reliable authority, that the percentage figure applies to end-use plants, *i. e.*, plants which produce GR-S (Buna S) from butadiene and styrene, neoprene and Butyl. It provides for the completion of plant facilities to produce 452,000 tons of synthetic rubber in government-owned plants by the end of 1943.

Of the percentage of top priorities now alloted, 41.9% is earmarked for GR-S (Buna S), 1% for GR-M (neoprene), and .07% for GR-I (Butyl Rubber). Clearance is understood to have been given to about 55% of the plant capacity for butadiene and for about 63% of styrene, these percentages applying to the total production facilities required to meet the full recommendations of the Baruch Committee for 1,037,000 tons of synthetic rubber per year.

In view of the fact that the top priorities given to the Rubber Director were apparently somewhat less than those recommended by WPB Chairman Nelson, there is some speculation to the effect that the rubber program is in much better shape than Mr. Jeffers is willing to admit and that Mr. Jeffers may have been allocating materials obtained under top priorities in such fashion as to make progressively greater extensions of the AAAA ratings necessary until the entire program could be brought into production almost simultaneously. In other words, the butadiene capacity may have already exceeded that of the styrene or copolymer plants, and top priorities are needed to bring the productive capacity of these latter two plants up to that of the butadiene plants to balance the program. It must be stressed that this is pure speculation.

In a statement issued on February 4, intended to clarify the situation, Chairman Nelson stated that the assignment of priorities sufficient to complete plants capable of producing 55% of the GR-S (Buna S) rubber called for in the Baruch Committee report (which means 435,000 tons) will avert the rubber supply crisis which is expected to arise in October and November of this year, when stocks of crude rubber dwindle to the danger point. He said steps have been taken to assure completion by mid-July of the initial phase of the over-all synthetic rubber program.

On February 8, appearing before a meeting of the Engineers Society of Western Pennsylvania, Rubber Director Jeffers predicted that the synthetic rubber program, despite some delays, would hit its full stride in 1944. He added that the program "was moving along very nicely now" and intimated that the recent priorities decision had cleared the way for steady progress.

Legislation Still Possible

According to a statement made by Senator Gillette (Dem., Iowa) on January 27, the Senate Agricultural Subcommittee which has been investigating the synthetic rubber program, and which has constantly advocated a rubber-from-grains program, has no further plans for hearings on the rubber situation, but will now turn its attention to legislation dealing with the subject. Senator Gillette stated that the subcommittee and Rubber Director Jeffers are "cooperating very closely" and decried attacks which are being made on him.

Earlier, Senator Gillette disclosed at a press conference that the subcommittee was considering two alternatives in the way of legislation: (1) Introduction of a bill specifically directing the Rubber Director to bring into the synthetic rubber picture farm products as a source, meaning the use of alcohol made from grain; and (2) Appropriation of $8,000,000 to $10,000,000 for construction of a Government plant to make rubber from alcohol. Even if the formula did not work, the Senator said, the investment would be "a drop in the bucket compared with the millions that have been poured down the rat hole."

Senator Gillette also stated that representatives of several Government agencies, alarmed by the rubber shortage and the prospect of having bus and truck traffic taken off the roads, have asked the subcommittee to speed and enlarge

the program by legislation if necessary. Although the Senator said that plans "have been seriously advanced to take all bus and truck traffic off the roads" because of the rubber shortage, a spokesman for the Rubber Director denied any knowledge of such plans. It was admitted, however, that such orders might be formulated if the shortage becomes much more acute.

Appearing before the subcommittee on January 25, Michael J. Madigan, special assistant to Under-Secretary of War Patterson, testified that the War Department is rushing construction of chemical warfare plants as preparedness against the possible introduction of poison gas in the war and this was one reason why the department opposed unrestricted progress of the synthetic rubber program.

Amend Six General Orders

Six WPB orders on rubber, balata, rubber products, chlorinated and synthetic rubber were amended on January 27 to provide that further action under the orders may be taken or amendments to them issued by the Rubber Director as well as by the Director General for Operations. This step was taken in accordance with the delegation of authority to the Rubber Director contained in WPB Regulation No. 1, issued by Chairman Donald Nelson on January 9, as reported in our last issue.

The orders which were amended in this action are the following supplementary and general preference orders: M-13 (Synthetic Rubber); M-15-b (Rubber and Balata and Products and Materials of which Rubber or Balata Is a Component); M-15-b-1 (Rubber and Balata and Products and Materials of which Rubber or Balata Is a Component); M-15-e (Restriction of Transactions in Rubber Life Saving Suits); M-15-f (Order Restricting the Use of Rubber Cements and Adhesives); and M-46 (Chlorinated Rubber). No other changes were made in the orders by the amendments.

CHANGES IN VARIOUS RUBBER ORDERS MADE BY WPB AND OPA

Several changes in existing WPB and OPA orders have been made in recent weeks, while relatively few new ones have been issued. These changes and additions are grouped below by commodity for convenience.

RUBBER DRUG SUNDRIES

Maximum prices for rubber drug sundries at all distribution levels, effective February 1, were announced by OPA on January 16 with the issuance of Maximum Price Regulation 300 (Maximum Manufacturers' Prices) and 301 (Retail and Wholesale Prices). Ceilings for the "Victory line" of rubber drug sundries are specified in dollars and cents, and manufacturers are required to stamp the maximum retail price of each item on the article itself or on the container in which it is sold to the public.

Manufacturers' ceilings on rubber drug sundries not included in the Victory line are moved back to prices which were being asked a year ago. Victory line rubber drug sundries are hot water bottles, combination syringes, ice caps and bags, and invalid rings produced after January 31, 1943, meeting minimum standards set by the War Production Board.

For the information of consumers, wholesalers and retailers, manufacturers must mark all articles included in the Victory line, except those sold to mail order houses, with the maximum retail price. This may be done either by stamping the price on the article itself, or by marking the container in which the article is sold. Such articles sold by mail order houses must be marked either with the ceiling price or the letter "V." Other rubber drug sundries produced after January 31, 1943, must be marked with an "R" or the maximum retail price.

Of particular interest to wholesalers and retailers is an arrangement which in effect establishes maximum dollars and cents prices at those levels for all rubber drug sundries. This is accomplished through a provision that all price calculations for rubber drug sundries, except Victory line, and those sold to mail order houses, must be made at the manufacturing level. Manufacturers must indicate such maximum retail and wholesale prices either by giving written notice or by marking the article or its container. Wholesalers must pass information as to maximum retail prices along to retailers.

Maximum manufacturers' prices of rubber drug sundries other than Victory line are frozen at December 1, 1941, levels. A formula which takes into account differences on that date in labor, material and factory overhead costs is provided for manufacturers in pricing new and substantially modified goods.

Except for the Victory line items, which are given maximum dollars and cents prices at all distribution levels, wholesalers' and retailers' maximum prices for rubber drug sundries are established in the action by the application of specified markups to manufacturers' maximum prices. In general, this procedure permits wholesalers and retailers to realize their customary markups.

Although the General Maximum Price Regulation, which established the highest price charged during March, 1942, as the maximum price, has governed sales of rubber drug sundries heretofore, the new action was necessary, OPA said, because of the creation of the Victory line and the rapid introduction of synthetics.

List of "Sundries" Included

As used in the new orders the term "rubber drug sundries" means the articles listed below, many of which may not be produced out of crude, latex, synthetic, reclaimed or scrap rubber, when made in whole or in part of rubber:

(a) Water bottles, ice bags, syringes and other flat goods, including, but not limited to air cushions, bedpans, combination syringes, face and baby bottles, fountain syringes, hot water bottles, ice bags and caps, and invalid rings and cushions.

(b) Baby supplies, including, but not limited to baby pants, baby bibs, breast pumps, breast shields, crib sheets, diapers, diaper covers and diaper bags, feeding nipples, infant bottle combinations, nipple shields, nursery bottle caps, pacifiers, play pads, and teething rings.

(c) Rubber tubing, stopples and irrigators for medical, surgical, dental, mortuary, veterinary and laboratory purposes, including, but not limited to catheters, irrigators, rubber policemen, stopples, tubes and tubing.

(d) Rubber dental supplies, including but not limited to abrasive wheels, cut-off wheels, dental dams, dental separating strips and mouth props, orthodontia bands, plaster bowls, polishing cups, discs and points, rubber denture, denture suction and model formers, and soft rubber wheels.

(e) Bulb and bulb goods for medical, dental, surgical, mortuary, veterinary and laboratory purposes, including, but not limited to atomizers, bulb syringes, cautery bulb sets, chip blower bulbs, household bulb syringes, Politzer syringes, sinus bulb sets, and spray douches.

(f) Rubber gloves and finger cots, including, but not limited to autopsy and mortuary gloves, household gloves and cots, industrial gloves and cots, medical and surgical gloves and cots, and obstetrical gloves and sleeves.

(g) Hospital and surgical supplies, including, but not limited to air mattresses, beds and pillows, hospital blankets, mattress covers, obstetricians' aprons, operating cushions, patient's bibs and throws, pillow cases, surgeons' aprons, surgical cases, and urologists' aprons.

(h) Prophylactics and other devices for the prevention of disease, including, but not limited to diaphragms, fitting rings, pessaries, prophylactics, and vaginal applicators.

(i) Hard rubber for medical, surgical, dental, veterinary, mortuary, and laboratory equipment and parts, including, but not limited to stoppers, syringes, and tubes, pipes, connections and accessories.

(j) All other rubber medical, surgical, orthopedic, pharmaceutical and laboratory goods, including, but not limited to acid bottles, blood pressure bags, bulbs and tubing, blood transfusion con-

nectors, brain surgery caps, caps and closures, colonic bags, colostomy outfits, crutch parts, dilators, cushions—ear, elbow and heel, evacuators, foot appliances—corrective, funnels, heating pads, Hagner bags, inhalation bags and face pieces, insufflators, intravenous connectors, medicine droppers and bulbs, microscope covers.

Orsat bags, orthopedic pads and parts, parts for medical, surgical, dental, veterinary and mortuary instruments, parts for acoustic aids, prostatic bags, prosthetic devices, rubber bands and cushions for artificial limbs, rubber suppositories, sinus pads and bags, spatulas, splint cushions, steam vaporizers, thermapeutic applicators, thermometer cases, tourniquets, truss parts, umbilical belts, urinals—individual wear, veterinary sleeves, and X-ray sheets, gloves, aprons and cooling hose.

Amendments to Sundries Orders

Shortly after the issuance of M.P.R. 300 and 301, two amendments to each order were issued by OPA. The first, Amendment No. 1 to M.P.R. 301 (Retail and Wholesale Prices for Rubber Drug Sundries), issued on January 29 and effective February 1, permits three types of baby feeding nipples to be priced at retail higher than the limit established in the original price order. They are the breast type, semi-breast type, and valve type.

As with other baby feeding nipples, they must be priced in accordance with provisions in the regulation, but are not limited to the three for 25 cents or 10 cents each set as the upper price limit for others. This is because they were sold in a higher price range on December 1, 1941, the base date established by the regulation.

No provision was made for pricing the three types earlier because it was assumed that they could not be produced under restrictions on materials imposed by the War Production Board. However, manufacturers have found it possible to produce them within the restrictions, and the price regulation is broadened accordingly.

The same amendment also names certain articles which were not intended to be classed as rubber drug sundries and that are not included in the regulation. These are: adhesive tape, medicated footpads and plasters, sanitary belts, supporters (men's athletic), surgical elastic bandages, surgical elastic supports, surgical stockings, surgical tape, suspensories, and trusses. These same articles are also excluded from the operation of M.P.R. 300 by Amendment No. 1 to that specific regulation.

The second, Amendment No. 2 to both M.P.R. 300 and 301, issued on January 30, postpones for one month the application of both original regulations to certain articles in order to permit investigation of claims of hardship brought by manufacturers of these articles. These amendments exclude from operations of the price regulations until March 1, 1943, the following articles: Baby bibs, baby pants, crib sheets, diapers, diaper bags, diaper covers, hospital blankets, mattress covers, pillow cases and play pads.

Hardship was claimed by the manufacturers on the basis of sharp material cost increases since December 1, 1941, the base date of the regulation. They also asserted that there are peculiar problems connected with pricing these articles that do not exist in relation to other commodities covered in the regulation.

Return Empty Metal Drums

Because of the existing critical situation on metal containers, rubber manufacturers are urged to return the empty metal drums in which liquid products are shipped direct to their suppliers as soon as possible. In practically all cases, the suppliers will pay freight or truck transportation charges and will credit the shipper at the ceiling prices for containers returned in usable condition. In order to facilitate cleaning of the drums at the plants and warehouses of the suppliers, manufacturers are requested to wash them out with water promptly after the contents are removed and to replace securely the bungs or lids to prevent contamination in storage before shipment. Shippers are reminded that the weight of the containers returned in any one shipment should be not less than 100 pounds since any weight under this figure takes the 100 pound freight rate.

MECHANICAL RUBBER GOODS

The elimination of a report previously required and several changes in the original regulation are contained in Amendment No. 6 to Maximum Price Regulation 149 (Mechanical Rubber Goods), issued by OPA on January 28 and effective February 3. Changes require deduction from maximum prices of charges for the Federal excise tax that was repealed November 1, 1942; add to the regulation a definition of synthetic rubber, the same definition incorporated in other regulations affecting rubber commodities; and simplify expression of provisions covering Federal and state taxes in relation to maximum prices without changing their effect.

The report that is no longer required covered manufacturers' maximum and selling prices for goods, except standard list articles, whose maximum prices are determined by use of a cost formula. Enough of these reports have been received and corrected to make certain that the majority of members of the industry understand operation of the formula, OPA said. This amendment does not eliminate the report required for standard list articles for which no price was in effect on the appropriate base date established by the regulation.

Because some manufacturers had adjusted their prices on October 1, 1941, in a way that did not reflect fully the amount of the Federal excise tax, the provision that the charge for the tax be deducted wherever it is still included in a maximum price, is limited to the difference between the net price in effect September 30, 1941, and the maximum price with the tax included.

RUBBER FOOTWEAR

Employers who need rubber boots or rubber work shoes for use by employees doing work essential to the war effort, public health or safety during disasters are now eligible for rationing certificates to permit their purchase under the terms of Amendment No. 8 to Ration Order 6 (Men's Rubber Boots and Rubber Work Shoes), issued January 13 and effective January 19.

An employer faced with such an emergency may apply to his local rationing board, which reports immediately to the state OPA director and gets permission to issue a certificate for the needed number of pairs. The employer must retain title to the footwear. Previously, no employer could obtain boots or shoes to furnish his employees unless he had done so in the past.

Under the terms of Amendment No. 9 to this ration order, issued and effective February 10, retailers and distributors are permitted to exercise greater choice as to the type of rationed rubber footwear they may buy in replenishing inventories; to increase inventories when they are not large enough to serve customers' needs; to get stocks needed to fill orders of certain Government agencies that are permitted by the regulations to buy rationed rubber footwear without turning over rationing certificates to the sellers; and to open new sales outlets.

RUBBER FABRICS

Deduction of Federal excise tax charges from maximum prices for rubber fabrics, apparel and other commodities containing rubber, is made essential under the terms of Amendment No. 3 to Maximum Price Regulation 220—Certain Rubber Commodities. (EDITOR'S NOTE: Deduction of this tax from other prices pertaining to other types of rubber products has also been made mandatory, as indicated elsewhere in this issue.)

In most instances, OPA stated in issuing the amendment, which is effective February 8, the tax probably has not been charged since it was repealed last November. However, as it was part of the maximum price of some manufacturers in the base price period of March, 1942, its deduction where still charged is now required.

Several other changes were included in the amendment. For instance, manufacturers are now excused from making reports on maximum prices for orders of less than $25.00 which involve prices

changed only because of shortages of materials or parts or determined on the basis of direct costs, wage rates and gross margins. From 45 to 75 days, instead of 60 days, are now allowed manufacturers who begin production of a commodity as a standard list item to adjust their maximum prices.

The amendment also establishes for the first time a requirement that no manufacturer shall charge a larger proportion of transportation costs incurred in the delivery of rubber commodities than he charged purchasers of the same class for the same or similar commodities during March, 1942.

INDUSTRIAL TRUCK TIRES

The sale and delivery of new tires for industrial power trucks were placed under control on January 15 with the issuance of Supplementary Order No. M-15-g by the WPB Director General for Operations. The order provides that no rubber tires for industrial power trucks shall be delivered for replacement purposes except to fill purchase orders rated A-1-a or higher on PD-1A certificates. War orders are exempted from the restrictions, as are orders for tires for new vehicles, with the provision that no vehicle manufacturer may have an inventory in excess of his requirements for thirty days.

These tires are not now being rationed, but for the past several months the amounts of rubber allotted for their manufacture have been insufficient to meet the demand, resulting in a heavy backlog of orders. While it is proposed to increase the rubber allotments to fill essential requirements, the restrictions have been imposed to insure that the tires go only where they are vitally needed in important war industries. Industrial power trucks are used primarily for transporting materials in and around industrial plants, warehouses, docks, shipyards, airports and depots.

RUBBER HEELS

Manufacturers of rubber heels were excused from reporting their unit costs to OPA with the issuance of Amendment No. 5 to M.P.R. 200 (Rubber Heels, Rubber Heels Attached, and Attaching of Rubber Heels) on February 1. Since such manufacturers use different cost bases the necessary information can best be obtained by cost studies made at the various plants by OPA accountants, it was stated. On February 1, OPA reissued M.P.R. 200, the new regulation, as amended, incorporating all of the previous amendments.

GENERAL TIRE TO OPERATE GOVERNMENT SYNTHETIC RUBBER PLANT

A contract to operate one of the new Government-owned copolymer plants in Texas has been awarded by the Rubber Reserve Co. to the General Tire & Rubber Co., which will operate the plant in conjunction with the General Latex & Chemical Corp., Cambridge, Mass. Harvey J. Elwell, president of General Latex (the predecessor of the Vultex Chemical Co.), will serve as general manager of the new plant.

The plant will manufacture GR-S (Buna S) and will receive its butadiene from the Humble Oil Company which has a plant under construction in the same locality. Both the butadiene and copolymer plants are scheduled for completion by June of this year.

In announcing receipt of the contract on February 8, William O'Neil, president of General Tire, stated that the company has been interested in the synthetic rubber program for many years and has always believed that the polymerization of butadiene and styrene should be done at the point where the butadiene is made, thus saving expensive transportation costs.

Some Data on Norepol

Some interesting data on Norepol, the rubber substitute from vegetable oils first announced six months ago, was disclosed in a statement issued by the Department of Agriculture on January 25. According to the statement, two companies are now making Norepol under trade names of their own, and other companies are turning out a finished product under the name of Norepol. Some others are making an intermediate material sold to manufacturers of rubber products.

(EDITOR'S NOTE: Included among companies now making Norepol under their own or other names are Reichhold Chemicals, Inc., American Resinous Chemicals Corp., Werner G. Smith Co., Sherwin-Williams Co., and the Bell Telephone Laboratories.)

Nearly 100 tons of Norepol have been made to date and has already passed into consumer hands, the report continues, while reliable estimates indicate a minimum demand of 12,000 tons in 1943. It is estimated that a much larger tonnage could be turned out annually.

The pilot-plant policy of the Department's Bureau of Agricultural Chemistry and Engineering, adopted with the establishment of the four regional research laboratories for industrial utilization of farm commodities, has been a factor in getting the new product into use as well as speeding work on other rubber intermediates in the Department. The pilot-plant serves as an intermediate stage between the laboratory test tube and commercial production.

W. J. Sparks, co-inventor of Butyl Rubber and an expert in polymerization chemistry, joined the staff of the Peoria (Ill.) Laboratory soon after it was started. It was Dr. Sparks who blocked out the basic reactions for the production from vegetable oil of the rubber-like product now called Norepol (*Nor*thern *Re*gional *Pol*ymer). That was in the autumn of 1939. Later, Dr. Sparks returned to the Standard Oil Development Co.

The work started by Dr. Sparks was then carried on in the Bureau by Dr. J. C. Cowan, who developed the specific reactions that resulted in the laboratory product from soybean, corn or other vegetable oils. Then, under the supervision of Dr. R. H. Manley, who had come to the laboratory as head of the Division of Oil and Protein Research, Dr. Cowan—with Dr. Waldo C. Ault and Dr. Howard M. Teeter—went ahead on the process and pilot-plant trials and became co-inventors of the Norepol process which is known only to the Government and those who are using it to manufacture rubber.

No Relationship to Factice

Department chemists say the Norepol process has practically no relationship to the factice process, which also produces a rubber-like substance, except that both use vegetable oils. The factice process, which has long been established, consists principally in treating semi-drying oils with sulfur or reactive compounds of sulfur. In making Norepol, instead of treating the entire oil, from whatever crop it may come, a definite series of chemical reactions is employed during the course of which selected constituents of the oil are used, leaving other constituents as useful by-products. Essentially, the process consists in the controlled polymerization of the linoleic acid in the oil.

The Department first described Norepol as having a number of the valuable characteristics of natural rubber in considerable degree, including 200 per cent stretch, tensile strength of 500 pounds to the square inch, and excellent resistance to oxidation and to the effects of water and alcohol. The general run of natural rubber has a 600 per cent stretch and a tensile strength of 3,000 pounds or more. However, for certain purposes Norepol is highly useful.

Since the first public report, and as a result of tests in the Peoria pilot plant and by a number of factories, improvements have been made in the product. In particular, the necessary constituents can now be produced in purer form and there is better control of the polymerization process.

A point of much interest in the overall economy of wartime is that what is left of vegetable oils after the separation of material for Norepol, including glycerol, can be used by industries that consume vegetable oils to make some of the same products they have been making from the whole oil.

Butadiene Developments

According to a statement by Deputy Rubber Director Bradley Dewey, issued on February 3, plans for a butadiene plant at Wood River, Ill., have been cancelled because of the shortage of certain components. He stated that it had been intended to convert a refinery of the Standard Oil Co. of Indiana to a butadiene plant, using the Houdry process, and that original plans called for completion of the conversion by May 15.

In trade circles it was stated that the cancellation of the Wood River project, the second since the synthetic rubber program was started, the first having been the butadiene-styrene-copoylmer project at Gary, Indiana, resulted from shortages in certain critical equipment, notably turbo-blowers. When it became evident that the plant could not be completed before next November, instead of May 15 as planned, cancellation followed. With the cancellation of this project, it is now believed that only three of the butadiene plants being built by the Government will use the Houdry process.

Little further has been heard regarding the status of the butadiene plant near Charleston, West Virginia, to be operated by the Carbide & Carbon Chemicals Corp. This plant was supposed to have gone into operation early last month but apparently has not yet his its stride due to the lack of needed components. It seems, however, that a trickle of butadiene from this plant is beginning to come through, since Firestone announced the receipt of some butadiene from West Virginia on January 20, described as "the first butadiene from grain alcohol." The material was shipped by tank truck and was immediately put into process.

The butadiene plant operated by the Standard Oil Co. of Louisiana in Louisiana went into operation on January 29. The largest plant yet put into operation, it has a rated capacity of 6,600 to 9,000 tons of butadiene per year, depending upon the quality of the petroleum fractions used as feed stock. The product is reported to be 99% pure, thus exceeding the Government's purity specification. The plant was under way prior to Pearl Harbor and was planned and privately financed by Standard Oil. It was originally scheduled for completion last October and the delay was attributed to increasing shortages of critical construction materials.

A new fluid catalytic cracking plant was opened by Standard Oil of New Jersey at Bayway, N. J., on January 18. The new unit, one of the largest of its kind, will be devoted principally to the manufacture of 100-octane gasoline, but will also contribute butadiene to the synthetic rubber program.

The only way to insure the success of the synthetic rubber program, according to a report recently submitted to Rubber Director Jeffers by the Federation of Architects, Engineers, Chemists and Technicians, a C.I.O. affiliate on the West Coast, is to speed up the program by converting existing plants and equipment for the quick manufacture of butadiene and not to wait for the delayed construction of new plants. The report uses as an example the small butadiene plant built in Houston, Texas, "where a delay of some ten months set in before capacity production was attained."

Alcohol Developments

The Government is continuing to make extensive preparations for the production of butadiene from alcohol, although the petroleum and alcohol plans have not been altered greatly, according to Washington circles. Dr. Walter G. Whitman, assistant director, Chemicals Division, WPB, recently revealed that 40,000,000 gallons of ethyl alcohol had been set aside for the immediate use of butadiene plants that will come into production during the early part of this year.

Dr. Whitman estimated that 1943 production of alcohol would approximate 490,000,000 gallons, of which 200,000,000 gallons will be set aside for the rubber program. Total alcohol requirements for 1943 were set at 510,000,000 gallons, and our needs in 1944 were estimated at between 590,000,000 and 640,000,000 gallons, of which 270,000,000 to 310,000,000 will be earmarked for butadiene.

Appearing before the Senate Agricultural Subcommittee on January 26, WPB Chairman Nelson repeated former testimony to the effect that he believes production of synthetic rubber from agricultural products, notably grains, is a surer method than production from petroleum. "The process of producing butadiene from grain will be satisfactory," he said, "but I don't know about all the oil processes recommended." Mr. Nelson said that the complete rubber program envisioned production of about 340,000 tons of rubber from grains.

A new plant to make grain alcohol for use in various war industries has just been completed by the New England Alcohol Co., a subsidiary of the Monsanto Chemical Co. The equipment is said to comprise practically all used machinery and parts, secured by scouring junk yards and salvage heaps for odds and ends of usable apparatus. Broken-down railroad tank cars are being used for cookers. The plant has a capacity of 3,500,000 gallons a year and involved the purchase of only $2,400 worth of vital materials, most of which was electrical wiring. It was put into operation one month from the day it was started.

Developing Training Program

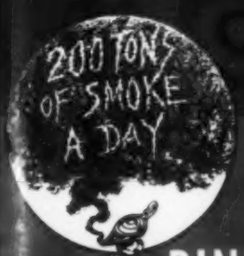
Because of the fact that about 20,000 workers will be needed in the synthetic rubber industry when it is in full operation and because difficulty is already

Here is an excellent photograph of a leaf of Cryptostegia. Latex of the Cryptostegia occurs in the leaves, twigs and stems, as well as the root, and when a leaf is broken, as seen here, the latex oozes out and forms into drops. Unlike guayule, Cryptostegia may be harvested without destroying the plant. The plant is under experimental cultivation by the U. S. Rubber Co. at Paramus, N. J., as well as in other sections of the country. Photograph, courtesy U. S. Rubber Co.

The **BLACK** *of*
TOMORROW...

STATEX

A COLUMBIAN COLLOID



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being met in obtaining them, since the process is new and no supply of skilled labor can be drawn upon easily without further training, the War Manpower Commission announced on February 6 that it is developing a special recruiting and training program.

Needed, the WMC noted, will be general management, engineering and technical employes, laboratory research staffs, and power, supervisory, operating, warehouse, office, plant protection and maintenance workers.

Preliminary investigation, the report said, indicated that workers most easily adaptable to synthetic rubber production were those who have had experience with the more modern types of petroleum refinery equipment, such as thermal and catalytic cracking or lubricant processing, and in the heavy continuous-process chemical industries.

United States Employment Service offices near the synthetic rubber plants have made their labor recruiting and placement facilities available to officials of the new plants and the WMC urges men and women with operating, engineering and technical training which might fit them for employment in the new plants to get in touch with these offices at once.

Two New Synthetics

Two brothers of Morgantown, Maryland, Clarence and Lonnie Gapen, are reported to have developed a synthetic rubber tire tread in a makeshift laboratory maintained in the basement of a store run by the brothers. It is said to be composed chiefly of waste materials and to make it possible for motorists to ignore steep, icy streets and highways. The tread is ⅛th-inch thick and can be applied to an ordinary casing by cold application. K. G. Knight, a chemist of Lincoln, Nebraska, is also reported to have developed a formula for synthetic rubber from corn products. Nothing has been divulged on the method other than that it does not use alcohol in its process.

Japan Plans Synthetic Production

According to a recent broadcast from Japan, heard by monitors of the United Nations, a new project for synthetic rubber has been developed as the result of studies of the Scientific Research Institute of the Kyoto Imperial Institution. Although no details were given, the claim was made that the process developed called for a two-stage method, compared with the four-stage method of the Germans and the three-stage method of the Russians. The German method is based on acetylene and the Russian on alcohol.

The same broadcast indicated that the Goodyear factory at Buitenzorg, which had been making bicycle tires, has been brought up to full capacity, with a variety of rubber products now being manufactured. The Buitenzorg plant was partially destroyed prior to the Japanese invasion, and it is believed that all of the compounding ingredients were either removed or destroyed. Most of the important equipment was wrecked.

Miscellaneous Regulations

Several recent regulations have been put into effect pertaining to the over-all synthetic rubber program, as follows:

Dehydrogenation catalysts and catalyst carriers, vital in the process of manufacturing synthetic rubber, have been exempted from price control through the issuance of Amendment No. 50 to Supplementary Regulation No. 1 of G.M.P.R., effective January 23. This is in keeping with previous OPA actions exempting certain chemicals, such as ethyl alcohol and furfural, when sold or delivered for use in the synthetic rubber industry.

Price control over sales of calcium carbide by the Defense Supplies Corp. to other Government agencies and to lend-lease purchasers has been removed. This was accomplished by Amendment 21 to Supplementary Regulation 4 of G.M.P.R., effective February 16. It does not, however, affect the sales made by DSC to commercial users.

Requests for allocation of capryl alcohol and phthalate plasticizers must be made in the future on standard forms PD-600 and PD-601, according to Allocation Orders M-167 and M-203, respectively, both of which were issued by WPB on February 6.

CRUDE RUBBER SURPLUS IS PROVING ECONOMIC PROBLEM TO JAPAN

Although Japan's conquest of the Far East has played havoc with the rubber needs of the United Nations it has brought her little financial gain and a tremendous economic problem. According to word brought to this country by foreign traders, the Japanese are offering crude rubber at ⅝ths of a cent to one cent a pound at Singapore with few takers at present. Small quantities, it is reported, are being purchased by German agents for storage until some means of breaking the blockade are found.

Another interesting report, revealed in the February 6, 1943, issue of *Business Week*, is to the effect that a trickle of Malayan rubber has begun to arrive at West Coast ports, via Nagasaki and Vladivostock. Tokyo is said to have been selling modest supplies of rubber to Russia in recent months, with all such deals reported to Washington and London, and Russia is now sending some of this rubber to the United States in neutral Soviet vessels, *e.g.*, neutral as far as Japan is concerned.

Developments in Latin America

According to a report from the Office of the Coordinator of Inter-American Affairs, rubber has become one of the principal cargoes on air routes from Central America. More than 100 tons of crude rubber have been flown to the United States from Central America alone since early last December. More than half of this air-borne rubber has come from Panama, with Nicaragua and Guatemala contributing goodly portions. The rubber thus far brought in from the Canal Zone has been seized enemy rubber, but the balance is in the form of "tree scrap" from the wild Castilloa trees.

It is also reported that the big chicle companies have agreed to use their field forces to collect rubber from the rubber-bearing areas in the south of Central America. The Chicle Development Co., of New York, has contracted with the Rubber Reserve Co., to gather all the latex that its 15,000 to 20,000 chicle workers can collect from Castilloa trees growing wild in the chicle country from Mexico to Colombia. Other firms have signed similar agreements.

Chicle and Castilloa trees are found in much of the same areas, while their tapping seasons are almost exactly opposite, chicle being tapped in the wet season and Castilloa rubber during the dry season. Although the tapping seasons overlap slightly, it is believed that rubber tapping will be given the preference.

The prediction that Haiti will produce at least 10,000 tons of rubber annually by the end of 1944 has been made by Thomas A. Fennell, president of SHADA (Haitian-American Agricultural Development Corp.). In addition to establishing a 100,000-acre plantation devoted to the cultivation of cryptostegia, SHADA is also developing rubber from Hevea and Castilloa trees. The cryptostegia program is expected to employ 100,000 Haitian workers, or one man per acre, and a yield of 200 pounds per acre per year is termed a "conservative estimate" by Mr. Fennell. Commercial shipments of cured rubber are expected to begin this Fall, with full production scheduled for a year later. Current plans call for growing 4,000 cryptostegia plants per acre.

Plans are also afoot for the development of a 50,000-acre cryptostegia plantation in Mexico, at a cost of about $25,000,000. The brain-child of Miles Sherover, former assistant chief of the rubber division of BEW and organizer of Venezuela's only tire factory, the plan is now under consideration by Mexican officials. Planting will get under way just as soon as official approval is given.

Rubber Reserve Will Negotiate

Heretofore, the Board of Economic Warfare, which is headed by Vice-Pres-

ident Wallace, has directed the activities of the Rubber Reserve Co. in the purchase and cultivation of crude rubber outside of the Continental United States. It was learned on January 21, however, that Rubber Director Jeffers, under the powers relegated to him, had given Rubber Reserve increased responsibility for negotiations for rubber from abroad in a directive issued on January 9. The switch, according to a spokesman for the Office of the Rubber Director, was made to centralize authority over the import program.

It was explained, however, that the BEW would continue to prepare studies of potential rubber purchases and cultivation programs and would offer suggestions to the Rubber Director as to what "could and should be done." The Rubber Director, in turn, will scan each program from the standpoint of feasibility, expenditure of materials, and cost, and if he approves will issue a directive to Rubber Reserve to proceed with contract negotiations. Previously, such a directive would have gone to BEW.

In Washington circles, the move giving increased responsibility to Rubber Reserve on contract negotiations for rubber from abroad was interpreted as a setback for BEW and its chairman, Vice-President Wallace. There have long been differences between BEW and the Reconstruction Finance Corp., headed by Secretary of Commerce Jesse Jones. Rubber Reserve Co. is a subsidiary of RFC. Adherents of BEW have contended that the rubber program was hampered by banker-like caution in obtaining rubber from abroad, whereas RFC spokesmen have replied that the program was pushed with diligence.

At an airfield in Nicaragua, sacks of crude rubber, plainly marked "Rubber Reserve Co.", are being loaded into a U.S. Army plane to be flown to San Antonio, Texas. The rubber is "tree scrap" from Castilloa trees. Similar shipments are arriving almost daily from Panama and Guatemala.

Production in South Africa

British trade advices, reported to the Bureau of Foreign and Domestic Commerce, state that all work on the production of indigenous rubber in South Africa has now been centralized in the Rubber Production Research Committee, which supervises and controls research and is able to coordinate data.

To obtain rubber from the native sources — the *landolphia* vine and the *euphorbia* tree—in a form suitable for manufacture in South Africa, it has been found that a vast amount of research is necessary. The collection of rubber in South Africa is not the relatively easy task that it is in the plantations of Malaya.

The *landolphia* vine grows in dense forests in North Zululand, through Mozambique to Central Africa. The rubber obtained from the vine is of good quality, but climatic conditions create obstacles. Efforts are being focused on getting the rubber in the purest possible form.

There are about 120 different species of the *euphorbia*, it is stated, and all yield latex containing rubber in varying quantity. In all cases, there is a very high proportion of resin, which affects the quality of the rubber and must be separated therefrom. The Committee has decided to concentrate initial research on three main species of *euphorbia* found in Natal and the Eastern Province.

Plenty of *euphorbia* latex is available, according to one official, but the process of extraction is the present bottleneck. The public, he cautioned, should not expect appreciable quantities of *euphorbia* rubber for a long while.

Report on Kok-Saghyz

Over 18,000 pounds of *kok-saghyz* roots have been harvested from experimental plantings made in the summer of 1942 to determine the feasibility of producing rubber from this plant in North America, the Department of Agriculture reported on January 22. These roots are from only a small part of the test plantings of 1942. The balance have been left in the field to determine their ability to over-winter and produce seed the second year when seed production is greater.

Largest field plantings of last summer were made by the Forest Service, aggregating 130 acres at several National Forest nurseries in Minnesota, Michigan, Wisconsin, and Montana. On the basis of the year's plantings, the Department reports that *kok-saghyz* can be grown successfully in the northern tier of States from Vermont to Oregon. It requires fertile soils and is especially adapted to such organic soils as mucks and peats.

Root production of 4,000 pounds or more per acre was obtained at a number of localities throughout this belt. The highest yield was at St. Paul, Minn., where on unthinned plots it reached the rate of nearly 8,000 pounds per acre. Seed production was satisfactory on fertile Lake States soils and under irrigation in Montana and Oregon.

Preliminary tests made at the Eastern Regional Laboratory of the Bureau of Agricultural Chemistry and Engineering at Philadelphia showed an average yield of rubber from the raw roots of somewhat over 1%, or about 4½% of the roots, dry weight, as compared to a 6 to 8% average from Fall-harvested mature roots in Soviet Russia. Enough rubber will be extracted to permit further experiments to test its suitability for various specific uses and to determine suitable methods for extraction on a commercial basis.

The 1942 test plantings were made at more than 120 localities in 42 states and in Canada and Alaska. Most of them were at state agricultural experiment stations cooperating with the Bureau of Plant Industry and at nurseries and stations maintained by the Forest Service. Additional test plantings were made last Fall in the northern states and also in the south and west, including large plantings in national forests in Arkansas, Louisiana, Mississippi and South Carolina.

Experience of the 1942 test plantings indicates that some farm equipment may be used in *kok-saghyz* production with little or no change of design. The Lake States Forest Experiment Station devel-

oped mechanical seed pickers which are 85 to 95% efficient and save the labor of 5 or more men per acre in seed harvesting. These machines are being improved in cooperation with the Bureau of Agricultural Chemistry and Engineering, which is working on the adaptation of farm machinery or new equipment for root-digging and other operations.

Other Domestic Developments

According to a statement issued by the B. F. Goodrich Co., Akron, on February 3, nearly 2,000 varieties of plants found in the Western Hemisphere have been tested for rubber since March, 1942, by investigators of the department of agriculture at Cornell University, Ithaca, N. Y. The University is cooperating with Goodrich on a special program to locate and develop domestic rubber-bearing plants.

A new quick process to indicate how much rubber and resins plants contain is reported to have been developed as a result of the study to date. Only 5 minutes are required, it is stated, to give an approximate idea of the natural rubber in plant tissues.

Most of the plants so far examined show rubber content too low for commercial use, but some contain sufficient resin to warrant further study as possible sources of materials for synthetic or substitute rubber. On the basis of the studies thus far, *kok-saghyz* appears to be the most promising emergency rubber-bearing plant for growth in the north, but according to Professor Lewis Knudson, who is directing Cornell's plant research program, in normal times the yield obtained from *kok-saghyz* would hardly pay the cost of production in this country, even though the seed and the residue of the crop could be used.

It has also been learned that during the past two years strains of goldenrod six feet tall, whose leaves have a rubber content of 6 to 10%, have been domesticated at the experiment station near Savannah, Georgia, maintained by the Bureau of Plant Industry of the Department of Agriculture. This Spring farmers in the southeast will plant 15,000 acres of the seed in another giant government experiment to cultivate successful rubber-bearing goldenrod.

Progress Reported in Guayule

Progress in the expansion of the guayule rubber production program under the several cooperating agencies of the Department of Agriculture has exceeded early expectations, the Department announced on January 24.

The Forest Service, which is administering the production phases of the emergency program, is believed to have already started to mill the older shrubs planted by the Intercontinental Rubber Co. and previously reserved for seed collection. This Winter the factory at Salinas, Calif., operated by the Forest Service, will manufacture at least 600 tons.

Plantations being established this winter are expected to yield about 21,000 tons from the harvest starting late in 1944. The planting and harvesting schedule is planned to produce about 80,000 tons annually thereafter. Even the maximum production mentioned, the Forest Service pointed out, is small in comparison with the country's normal peacetime consumption of 700,000 tons.

The speed-up in actual rubber production over estimates made a year ago is partly the result of a change in field operations. Instead of harvesting the guayule shrub at the end of four years —which would have delayed the first substantial production until 1946 — the Forest Service finds that it can increase the number of shrubs per acre and harvest them at the end of the second growing season in the field, the anticipated rubber yield being about 800 pounds per acre. The new method requires the best irrigated land, but is warranted by the Nation's urgent need for natural rubber.

Only a small quantity of guayule crude is required to "liven up" considerable amounts of reclaimed rubber, and for use in some important products. Moreover, guayule rubber can be handled with the same manufacturing facilities that have been used for plantation rubber from the East Indies and Malaya.

New Plant for Mexico

According to an announcement by William O'Neil, president, the General Tire & Rubber Co. has received approval from the government to construct a guayule extraction plant in Mexico. The plant, which will cost approximately $1,000,000, furnished by General Tire, is expected to supply an additional 10,000 tons of guayule annually. The Board of Economic Warfare is said to have granted an allocation of priorities to the company to ship the necessary machinery to Mexico for the project.

FEBRUARY QUOTAS OF TIRES AND RECAPPING SERVICES UNCHANGED

Quotas of tire and recapping services for rationing in February, announced by OPA on January 27, are little changed from the January levels.

In the quotas for passenger cars, the February allotment of recapping services is 851,125, which compares with 800,000 for January. The Grade I tire quota is 161,000, unchanged from January, while the Grade II quota is 225,500 against 230,000, and the allotment of Grade III's is 690,475 against 690,000. A passenger car inner tube quota of 759,000 for February compares with 709,336.

The quota of truck tires is 345,122, and of recapping services 345,065, compared with 345,307 and 368,200, respectively. February's farm tractor and implement tire quota is 57,961, a sharp increase over January's 21,000 in anticipation of a seasonal upswing in demand. The inner tube allotment for trucks is 298,935, which compares with 335,863.

To Drop Reclaim Restrictions

Acting upon the suggestion of Rubber Director Jeffers, OPA has decided to eliminate ration board control over recapping of passenger tires with reclaimed rubber, according to a statement issued by a spokesman for that Office on February 8. While the decision has been reached, it was stated, the order putting the plan into effect is not to be issued until March 1 or thereabouts, although there was no explanation given for the delay.

It was emphasized the plan is designed to conserve present tires and the reclaimed rubber stocks of the nation. The source said motorists should not consider the decision to mean that "the rubber situation was so much better that they can relax and drive more." Under the present system rationing boards automatically issue certificates for recapping tires if a tire inspector declares it is needed.

The spokesman declared there could be no great waste of rubber because no crude or synthetic materials are involved. Instead, he said, the nation's reclaimed rubber stocks will be conserved. A motorist will have his tire recapped when he believes it is needed and will thus save the carcass. Otherwise the tire would be lost and a "war tire" made from reclaimed rubber, would be purchased. Much more reclaimed rubber would be used in the war tire than in the recapping process.

The decision to allow motorists to have tires recapped without ration board consent or an inspection, came after OPA was assured by Mr. Jeffers that there was an adequate amount of reclaimed rubber available for the program.

Revisions to Tire Ration Order

Five new amendments to Ration Order 1A (Tires, Tubes, Recapping and Camelback) have been issued since our last report on this order, as follows:

Amendment No. 5, issued on January 9 and effective January 20, covers a new plan to route tires in need of attention to dealers equipped to do a repair or recap job and also arranges for the distribution to dealers, for resale, of usable tires accumulated under the Idle Tire Purchase Plan.

Amendment No. 6, issued and effective January 14, makes changes in the periodic tire inspection program intended to minimize public inconvenience and smooth out occasional work peaks for the qualified inspectors. (This amendment was covered in some detail on Page 327 of our January issue.)

Amendment No. 7, issued February 2 and effective February 8, gives an opportunity to dealers whose business was in-

terrupted by tire rationing and who wish to reenter the automotive tire and tube trade to obtain limited stocks of passenger car tires and tubes. Others who might wish to enter the business may procure an initial stock of tires and tubes by meeting the same requirements as former dealers. The action serves to make possible the setting up of dealerships in areas that may not be adequately served.

Amendment No. 8, issued February 3 and effective February 9, permits switching of tires among passenger cars operated by a Federal, state, local or foreign government agency. As a result, police and other government-owned cars which do not have spares assigned to them specifically can draw tires from a common pool when they need spares or replacements. This constitutes a practice which makes a relatively few pool tires serve a large number of automobiles. The amendment also covers new rules pertaining to tire inspection records.

Amendment No. 9, issued February 3 and effective February 9, sets up a new list of persons who may apply for an emergency reserve of tires and tubes, including a state, but not its agency or subdivision, a person who has an Interstate Commerce Commission certificate of public convenience and necessity as a common carrier or a permit as a contract carrier, and a person who has applied for such certificate or permit and has been notified that he may continue the operations described in his application pending final decision. Conditions to be satisfied by applicants for emergency reserves are outlined.

Amendment No. 10, issued February 9 and effective February 15, contains several adjustments and additions to the regulations to make them fit any situation that has arisen during the first two months of operating experience. Principally, the changes provide tire eligibility for certain commercial vehicles which were disqualified by a technicality when the ODT excluded them from its regulatory controls.

The amendment also: (a) provides that local war price and rationing boards may issue certificates authorizing the purchase of 4.00x12 implement-type tires, a size which is in ample supply, for use on passenger automobiles that are eligible for replacements; (b) prescribes the conditions under which so-called "loaner" tires may be mounted and used on automobiles for short periods; and (c) makes certain vehicles eligible for two "mud and snow" tires in addition to their ordinary tires.

Certain unlicensed and limited-licensed commercial motor vehicles were exempted from the tire inspection provisions of General Order ODT No. 21, by an amendment to that order issued by ODT on January 18. The exempted vehicles are those which "by reason of limited license" cannot be operated over highways to get to tire inspection stations. These vehicles must still be inspected, however, if the owner or operator, or his agent, has been duly designated as a tire inspector or is qualified to become one.

Rebuilt Tube Trade Given Aid

Cooperating with the Office of the Rubber Director to encourage fullest possible use of available rubber products, OPA on February 2 authorized sellers of factory rebuilt used tubes for passenger car and truck tires to add the Federal excise tax to the maximum prices. The authorization was contained in Amendment No. 8 to Maximum Price Regulation 107 (Used Tires and Tubes). Factories may rebuild used tubes only upon application to the rubber director and receipt of permission from him. Previously the rebuilding of used tubes was prohibited by WPB.

Permission to add the excise tax to the maximum price of rebuilt used tubes retains those tubes on the same competitive basis as used tubes that are not reprocessed and which are not subject to excise tax. The reprocessed tubes must be marked "factory rebuilt," so as to be recognizable for price purposes. They are defined as follows:

" 'Factory rebuilt tube' means a used tube in which at least one damaged portion has been replaced by splicing and vulcanizing into the tube a sound portion of another tube or which has been cut down to a smaller size by splicing and vulcanizing together sound portions of the tube."

Amendment to Order L-61

Manufacturers of tire retreading, recapping and repair equipment may fabricate parts in advance of purchase orders and have a limited inventory of parts on hand, the Director General for Operations ruled on January 18 in amending Order L-61.

The order provides that such tire machinery may be sold only on orders with ratings of A-9 or higher, or on special authorization. This has had the effect of slowing the manufacture of parts and consequently has delayed the filling of approved orders.

This action permits manufacturers to have on hand component parts up to one-sixth the amount of such parts they manufactured in 1941. The parts cannot be assembled into new retreading, recapping or repair equipment, however, until approved purchase orders have been received.

Additional "E" Awards Made

Included among companies receiving the Army-Navy "E" award for production efficiency in recent weeks were the following:

American Steel & Wire Co., South and Cable Works, Worcester, Mass.

Philadelphia Insulated Wire Co., Philadelphia, Penna.

Union Asbestos & Rubber Co., Cicero Plant, Chicago, Illinois.

URGES CAUTION IN SHIFT FROM COTTON TO RAYON CORD

Caution should be exercised in the shift from cotton to rayon for tire cord for military vehicles, and the shift should not be attempted unless it can be demonstrated by scientific tests that rayon is superior, Oscar Johnson, president, told the National Cotton Council at its annual meeting, held in Memphis, Tenn., on January 25.

"If tire cord manufactured from rayon is essentially better for tire purposes than tire cord made from cotton we shall cheerfully make the sacrifice necessary to enable the military services to have rayon tires but scientific research conducted by the council and manufacturers of cotton cord indicate to us definitely and conclusively that for all military purposes to which tires may be put, tires manufactured from cotton cord are, to say the least, equal to those manufactured from rayon and for many purposes, the cotton-cord tire is superior to the rayon-cord tire," he said.

Mr. Johnson added that he had been advised that rayon tire cord of suitable strength for military purposes cannot be made exclusively from woodpulp but must be made from a blending of alpha-cellulose obtained from cotton linters and that the cellulose from the latter product constitute 70 to 75 per cent of the total materials used in rayon cord. Cotton linters are so necessary for the manufacture of munitions that the War Production Board has commandeered virtually the entire supply, he said.

"May I ask whence do rayon manufacturers propose to obtain cotton linters in sufficient quantities to enable them to produce 100,000 pounds of tire cord? It cannot be done without reducing the quantity of cotton linters available for explosives. It would be a travesty to equip our Army with rayon tires if at the same time we are forced to give our armed forces inferior ammunition."

New Organic Alkyl Peroxide

The availability of *t*-butyl hydroperoxide in commercial form has been announced by the Union Bay State Co., Cambridge, Mass. The new material is described as an unusually stable liquid with an active oxygen content of 17.8% (at 100% concentration) which can be handled and shipped in large quantities without danger of explosion from shock. It is soluble in many common organic solvents, such as alcohol, ether, ketones in general, esters, aromatics and petroleums. It is slightly soluble in water and is comparatively stable in the presence of various alkalis and acids. Standardized at a concentration of 50 to 60% (10% available oxygen), commercial *t*-butyl hydroperoxide appears to be ideally adapted for use as a catalytic agent in one or two-phase polymerizations, as an oxidation agent for laboratory purposes, and for numerous other uses.

MANHATTAN RUBBER ENTERS GOLDEN ANNIVERSARY YEAR

The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., this year celebrates the fiftieth anniversary of its founding as the Manhattan Rubber Manufacturing Co. The original company was incorporated on October 28, 1893, during the panic which lasted from 1893 to 1897. The company's progress has been coincident with an American era of industrial expansion, but its growth has been gradual and conservative. Today, the company is one of the largest manufacturers of mechanical rubber goods in the world.

The original plans of its founders called for a location in the neighboring city of Paterson, N. J., as the Knickerbocker Rubber Company. These plans were changed when an offer was made by George Engeman, prominent Passaic land owner, to finance the first building if the plant were built on his property in Passaic. This offer was accepted and the company's name changed to the Manhattan Rubber Mfg. Company. The building was erected by John W. Ferguson, Paterson contractor, who was also an early stockholder. Two months after the formation of the company, on January 1, 1894, manufacturing operations started in one small building, 50 feet x 150 feet, with a crew of 40 men. The site was an apple orchard adjacent to the large Speer vineyards in what was then a wooded, swampy and sparsely settled section of Passaic.

Original Incorporators of Company

The incorporators were Frank Cazenove Jones, father of Mr. Jones, president of the Okonite Co.; W. W. Dashiell, last surviving founder; Arthur Farragut Townsend; Peter Reid, of Reid & Barry; Samuel J. Watson, of the Watson Machine Company, Paterson; and George Woffenden. At the first meeting of the incorporators on November 1, 1893, Messrs. Watson, Woffenden, Dashiell, Jones and Townsend were elected to the board of directors. Officers of the company elected at the same meeting were: Mr. Jones, president, and Colonel Townsend, secretary and treasurer. At another meeting within the same year, Colonel Townsend became vice-president and assistant general manager; Thomas Robins, Jr., secretary, and the late Commodore Alexander Henderson, U.S.N. retired, treasurer.

Mr. Jones, the first president, was forced to retire in 1903 because of ill health, and was succeeded by the late Colonel Townsend, who served as president for 26 years up to the merger in 1929 which formed Raybestos-Manhattan, Inc. From 1929 until his death on January 14, 1940 Colonel Townsend was chairman of the board of Raybestos-Manhattan, Inc., and general manager of the Manhattan Division. Colonel Townsend was highly instrumental in building up the company, giving it most of his attention and active up to his death.

Two of Manhattan's early executives and several employees have been with the company for more than 45 years. These officials are F. L. Curtis, now vice president and treasurer of Raybestos-Manhattan, Inc., who was manager of the company's original factory office, and C. T. Young, factory manager, who was assistant to Mr. Curtis in the early factory office. Another early employee is C. E. Cummings, at present assistant secretary.

Manhattan, with a plant in Passaic that now employs nearly 4,000 persons and covers more than a million square feet of floor space, is now entirely engaged in war work. To date, 1,000 of its men have entered the Armed Forces.

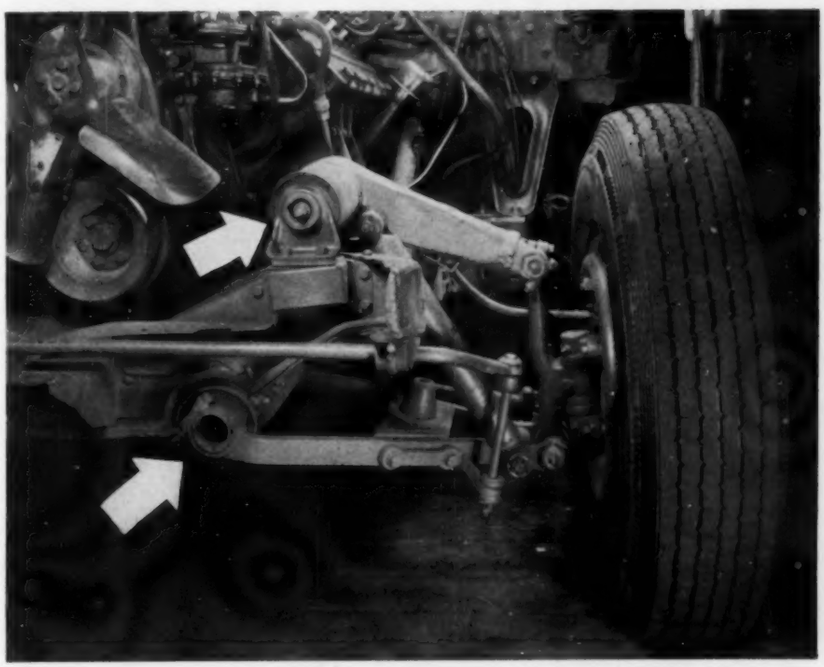
Montreal Meets March 12

The next meeting of the Rubber and Plastics Division, Montreal Section, Society of Chemical Industry, will be held in Granby, Quebec, on March 12, where the members will be guests of the Miner Rubber Company. More complete details will be made available shortly.

KemPol—New Chemurgic Rubber

The availability of another "chemurgic rubber" has been revealed by the Sherwin-Williams Co. Called KemPol, the material has been under commercial production at the Chicago plant of the company for the past few months, according to N. E. Van Stone, vice-president in charge of operations. Based on domestic drying oils not ordinarily considered suitable for edible purposes, KemPol is said to be an original development of the Sherwin-Williams Co. The tensile strength, elongation and abrasion resistance of the new substitute rubber are not equal to those of natural rubber, although it compares favorably in many other properties. It can be used for the manufacture of molded and extruded products, such as treads, mats, pads, erasers, jar rings, closures, gaskets, and braided hose. Because it lends itself to emulsification and solutions, with some limitations, it is already being used in the fields of fabric coating, tapes, adhesives, and sealing compounds. According to Mr. Van Stone, KemPol also shows considerable promise an an extender for natural, reclaimed, Buna and Butyl Rubber stocks.

GOODRICH TORSILASTIC SPRING FOR USE ON MILITARY COMBAT VEHICLES



Two units of the Torsilastic spring, briefly described in a recent issue of RUBBER AGE, which employs rubber in torsion as the spring element, are indicated by arrows in the above illustration. The unit consists of a shaft located centrally in a cylinder and the space between shaft and cylinder filled with rubber. The rubber is secured to both shaft and cylinder to twist when one is turned with reference to the other. Either cylinder or shaft can serve as the movable portion with the other anchored by suitable means. Designed and developed by the B. F. Goodrich Co., Torsilastic springs are being used on military combat vehicles only at present.

LOS ANGELES RUBBER GROUP HEARS NOTED JOURNALIST

Dr. A. Th. Polyzoides, noted journalist, educator, lecturer and commentator, widely known on the Pacific Coast, was the principal speaker at the dinner meeting of the Los Angeles Group, Rubber Divsion, A.C.S., held at the Mayfair Hotel in Los Angeles on February 2. Approximately 130 members and guests heard the speaker stress the complexity of the situation in the South Pacific. He emphasized the fact that although Japan would ultimately be defeated, the job of defeating her would be a tough one, pointing out that Japan now has under control physical resources equal to those of the United States and has under submission three times the population of this country.

The defeat of Germany is already assured, Dr. Polyzoides stated. The Casablanca conference, President Roosevelt's visits to Liberia and Brazil, and Prime Minister Churchill's visit to Turkey were all master steps in international diplomacy, he said, adding that no better site than Casablanca could have been chosen since the main strategy of the European war must be to prevent the union of the German and Japanese powers. Churchill's visit to Turkey, he claimed, had the latter possibility definitely in mind.

E. L. Perry, assistant director of the Guayule Emergency Rubber Project, which is in the hands of the Forest Service of the Department of Agriculture, also spoke. Mr. Perry showed moving pictures in natural color depicting the steps involved in the gathering and preparation of guayule seeds, the cultivation of the soil, and the culture of the baby plants. Offices for the Project, which embraces the planting of 500,000 acres in all, were recently moved from Salinas to Los Angeles. During his address, the speaker also revealed that guayule is being planted in carefully selected areas in various states.

During the business session, reports were heard from several committees and the officers delivered their annual summations. The reports of the treasurer and the membership committee were particularly encouraging. The matter of incorporating the group for the purpose of relieving individual members of responsibility in case of accident or unforeseen contingency was discussed and the matter has been taken under advisement.

A large number of new members were voted in, including Peter P. Pinto, general manager, and M. E. Lerner, editor, of RUBBER AGE. Prizes were generously awarded as usual, with war bonds purchased by the group going to W. E. Alexander (Caram Manufacturing), Howard Parkerson, Jr. (Farrel-Birmingham), and Paul Ritter (U. S. Rubber). The special prize, a sport jacket donated by B. E. Dougherty of the B. E. Dougherty Co., was won by M. J. Bain (L. H. Butcher). The 1943 Year Book of the group was distributed at the meeting.

Coming Events

Feb. 18. Buffalo Rubber Group, Joint Meeting with Western N. Y. Section, A.C.S., Niagara Falls, N. Y.

Mar. 1-5. Spring Meeting, A.S.T.M., Hotel Statler, Buffalo, N. Y.

Mar. 2. Los Angeles Rubber Group, Mayfair Hotel, Los Angeles, Cal.

Mar. 10. Ontario Rubber Group, Canadian Chemical Association, University of Toronto, Toronto, Canada.

Mar. 12. Rubber & Plastics Div., Montreal Section, Society of Chemical Industry, Granby, Quebec (under sponsorship of the Miner Rubber Co.).

March 16-17. N.A.W.M.D., Hotel Sherman, Chicago, Ill.

Mar. 19. New York Rubber Group, Building Trades Club, New York City.

Mar. 24-26. Ninth Annual Chemurgic Conference, Drake Hotel, Chicago, Ill.

Apr. 9. Rubber & Plastics Div., Montreal Section, Society of Chemical Industry, McGill University, Montreal, Canada.

Apr. 15-16. Rubber Division, A.C.S., Book Cadillac Hotel, Detroit, Mich. (Technical sessions at Masonic Temple).

June 28-July 2. Annual Meeting, A.S.T.M., Wm. Penn Hotel, Pittsburgh, Penna.

Oct. 5-7. National Safety Council, Sherman, LaSalle and Morrison Hotels, Chicago, Ill.

Plastics Features Akron Meeting

Plastics was the theme of the meeting of the Akron Group, Rubber Division, A.C.S., held at the City Club in Akron on January 22. Approximately 200 members and guests were in attendance and heard P. F. Robb, of the Hercules Powder Co., discuss plastics in general. A sound movie, in color, "Modern Plastics," was also shown, depicting the manufacturing of plastics as well as the molding technique. Hundreds of plastic products were on exhibit. An added attraction at the meeting was Dr. Witherspoon with his bag of medicines and tricks. He proved most entertaining and kept the audience in an uproar for fifteen minutes. At a short business session a nominating committee was appointed consisting of Ralph LaPorte (Seiberling), as chairman, and H. V. Powers (Goodyear), Clarence Moore (Philadelphia Rubber Works), and L. V. Cooper (Firestone).

New York Meets March 19

The next meeting of the New York Group, Rubber Division, A.C.S., will be held at the Building Trades Club in New York City on Friday, March 19. A program is now being formulated and full details will be available shortly.

DETROIT RUBBER-PLASTICS GROUP ELECTS OFFICERS FOR 1943-44

At a meeting of the executive committee of the Detroit Rubber & Plastics Group, Inc., held on February 5 at the Book Cadillac Hotel in Detroit, the following new officers were chosen for the 1943-44 season: *Chairman*, W. B. Hoey (Bakelite Corp.); *Vice-Chairman*, F. Wehmer (Minnesota Mining); *Secretary-Treasurer*, E. J. Kvet (Baldwin Rubber).

Chairmen of various committees were also named, as follows: *Program*, J. C. Dudley (Chrysler Corp.); *Entertainment*, J. R. Schroyer (Vanderbilt); *Publicity*, J. W. Temple (U. S. Rubber); *Membership*, A. J. Kearfott (General Motors). W. E. Biggers (Rohm-Haas) and J. P. Wilson (Ford Motor) were named to the executive committee, and J. H. Doering (Ford Motor) was named counselor.

Arrangements were also made at the meeting for the Spring Meeting of the Rubber Division, A.C.S., which will be held in Detroit on April 15 and 16. J. H. Norton (Auburn Rubber) was named chairman of the Entertainment Committee which will function during the Divisional meeting, and J. R. Schroyer (Vanderbilt) and E. F. Riesing (Firestone) as members.

In order to broaden the scope of the Wayne University project, which is the course on rubber and plastics given at the University under the sponsorship of the Detroit Rubber & Plastics Group, a special Educational Committee was organized, with W. M. Phillips (General Motors) as chairman, and the following members: W. G. Nelson (U. S. Rubber), E. F. Riesing (Firestone), J. C. Dudley (Chrysler Corp.); W. E. Biggers (Rohm-Haas), and Dr. C. W. Selheimer (Wayne University).

Ontario Group Hears Braidwood

Clinton V. Braidwood, young chemist of Reichhold Chemicals, Inc., Detroit, Michigan, credited with the development of Agripol, the "chemurgic rubber" recently introduced commercially by the company, was the principal speaker at a meeting of the Ontario Rubber Group of the Canadian Chemical Association, held at the University of Toronto, in Toronto, Canada, on January 27. Mr. Braidwood traced the development of Agripol and discussed its properties and applications. It was announced at the meeting that in view of the fact that the Rubber Division, A.C.S., will meet in Detroit next April the "International" meeting held annually in conjunction with the Buffalo Rubber Group on the Canadian side of Niagara Falls will not be held this year. It was also announced that the next meeting of the group will be held on March 10, and that W. D. Parrish, of the Hycar Chemical Co., would be the principal speaker.

STATIC ELECTRICITY TESTS DISCUSSED BY ENGINEER

Static electricity experiments have demonstrated that rubber tires impregnated with conductive materials drain static charges from trucks used in explosive plants, reducing the danger from sparks that might cause an explosion, according to a recent address by Dr. Victor Wouk, research engineer of the Westinghouse Electric & Manufacturing Co., before the winter convention of the American Institute of Electrical Engineers.

Big bombers can build up static charges powerful enough to give discomfiting jolts to ground crew men who touch the plane soon after it lands. This useless electricity may be the cause of a gasoline fire. On an extremely dry day, an automobile may build up an electrical pressure of 30,000 volts. These voltages rarely cause any damage in an auto because the amount of electricity the car can hold is extremely limited.

To measure this tiny current, Dr. Wouk fastened a wire to the body of a car and connected the wire to a microammeter. Another wire attached to the microammeter was put through the rear window of a moving auto and connected to a steel chain dragging in a grounded steel channel imbedded in an asphalt road. With this apparatus, he was able to make all the electricity in the car body flow back to the ground through the current measuring device.

When a car is driven along a highway, the current stops flowing when the auto becomes fully charged. When that point is reached all the electricity from the tires goes directly back into the roadway without passing through the body. The charge in a car drains away in a few seconds after the auto stops; it rarely lasts longer than 10 or 15 seconds.

A.S.T.M. SPRING MEETING WILL BE HELD IN BUFFALO

The Spring Meeting of the American Society for Testing Materials will be held the week of March 1 at the Hotel Statler in Buffalo, N. Y. A.S.T.M. Committee Week will be held jointly with the meeting, as usual. C. F. Smith, Jr., rubber technologist of the U. S. Rubber Reclaiming Co., is a member of the local committee of arrangements, which is headed by B. L. McCarthy, of the Wickwire Spencer Steel Co., as chairman.

Two technical symposiums will be held, one on powder metallurgy and the other on paints for civilian defense and related applications. Mr. McCarthy is handling the details of the symposium on powder metallurgy, with the details of the symposium on paints in the hands of W. H. Lutz, technical director of Pratt & Lambert, Inc. The latter symposium will include a talk on "Summary of the Commodities Picture," by E. H. Bucy, chief of the Protective Coatings and Materials Section of WPB.

LEADERS OF THE NEW YORK GROUP, RUBBER DIVISION, A.C.S.

John H. Ingmanson

Fred S. Conover

As reported in our previous issue, John H. Ingmanson, of the Bell Telephone Laboratories, Murray Hill, N. J., and Fred S. Conover, of the Naugatuck Chemical Division of the U. S. Rubber Co., Naugatuck, Conn., were elected chairman and vice-chairman, respectively, of the New York Group, Rubber Division, A.C.S., for the 1942-43 season.

Mr. Ingmanson, the new chairman, was born in Sycamore, Ill., on April 9, 1898. He attended the Universities of Illinois and Chicago and was employed as a research chemist in the beet sugar, dyestuffs and tin foil industries at various times. Just prior to joining the Bell Telephone Laboratories in 1928, he was works manager for the Crown Chemical Corp., manufacturers of intermediates for dyestuffs. Ever since joining Bell Telephone Labs., he has served with the rubber research group under A. R. Kemp. Mr. Ingmanson is married, has two sons, is active in the A.C.S. and A.S.T.M., and likes to fish.

Mr. Conover, the new vice-chairman, was born in Trenton, N. J., in 1900, attended elementary and high schools in Glen Ridge, N. J., and received his B.S. degree from Colgate University in 1922. He engaged in production work with the former Dexter Rubber Co. in 1923 and the Republic Rubber Co. in 1924-1925, and in research for the N. J. Zinc Co. from 1926 to 1930. From 1930 to 1935 he was with Manhattan Rubber at Passaic, and in 1936 served with the Virginia Rubatex Corp. In the latter year he joined Naugatuck Chemical and has been with the company since on compounding and technical service. Mr. Conover is married, has three children, has contributed to the technical literature of the industry, and is currently chairman of the technical committee of the Rubber Reclaimers Association.

California Group Discusses Buna

An open and frank discussion of Buna S featured the second meeting of the recently-organized Northern California Rubber Group, held in Oakland, Calif., on January 28. The meeting proved to be intensely interesting since the research chemists of practically all the rubber manufacturing companies in Northern California were present and discussed their experiences freely. Some of the members of the Rubber Laboratory of the Mare Island Navy Yard participated in the discussion. Some questions on Buna S were raised which none of the members and guests present could answer and it is planned to have these questions answered by Buna experts at the next meeting of the group.

New Type Waterproof Bag

A new type of waterproof bag, in sizes never before manufactured in quantity for the protection of medical supplies and sensitive radio and electric equipment, was recently designed for and used in the American landing operations in North Africa. They were manufactured in sufficient quantities for the campaign within a total period of two weeks, it has been revealed by the War Department. The larger of the bags, which were made in five sizes, measured 26 by 36 by 72 inches and was oblong in shape. It was made of a two-ply sateen fabric, bonded with rubber, and all seams were vulcanized. The open end was fitted with a "throat," 28 inches long which could be gathered and tied up.

NAMES IN THE NEWS

J. H. NESBIT, vice-president of the U. S. Rubber Reclaiming Co., has been elected executive vice-president of that company, JOHN PLUMB, factory manager of the company, was elected vice-president in charge of production, and A. F. TALLMER, formerly assistant secretary, was elected secretary.

JOSEPH THOMAS, one of Akron's best known lawyers, has been elected an assistant secretary of the Firestone Tire & Rubber Co. He will also head the legal department of the company, succeeding B. M. ROBINSON, who was recently elected secretary.

PHILIP B. WELD, who had been serving as vice-president, was elected president of the Commodity Exchange, Inc., New York City, on January 21. LEROY G. SCHEINLER, vice-president of the Robert Badenhop Corp., was elected vice-president of the Rubber Group, while LOUIS V. KEELER and CHARLES T. WILSON were elected governors to represent the Rubber Group for a term of three years.

JOHN WESTENDORF, treasurer and general manager of the Premier Rubber Manufacturing Co., Dayton, Ohio, was recently elected a director of the Third National Bank & Trust Co., of Dayton. MR. WESTENDORF is also active in the operation of the Dayton Castings Co.

CHARLES J. DURBAN, associated with the U. S. Rubber Co. since 1937, serving as advertising manager of the Tire Division ever since the company absorbed the Fisk Rubber Co., has been named assistant advertising director of the company.

THOMAS P. BROWN, formerly general manager of the chemical color division of Reichhold Chemicals, Inc., at Brooklyn, N. Y., has been appointed director of research for the Eastern laboratories of the company with headquarters at the plant and laboratory building in Elizabeth, N. J.

JOHN M. DAVIES, associated with the B. F. Goodrich Co. in various research capacities since 1926, has been appointed director of physical research of that company.

RUSSELL A. FIRESTONE, who has been serving as general manager of the Nebraska Defense Corp., a subsidiary of the Firestone Tire & Rubber Co. which is operating a bomb loading plant in Nebraska, has been elected assistant treasurer of the parent company and has returned to Akron to assume his new duties.

PAUL KOLACHOV, director of research and development for Joseph E. Seagram & Sons, Inc., Louisville, Kentucky, has been made assistant vice-president in charge of production for that company, serving in this capacity as a technical counselor.

WENDELL J. POTTER, associated with the laboratory of the R. T. Vanderbilt Co., Norwalk, Conn., for the past several years, has left that company to join the research laboratories of the B. F. Goodrich Co. at Akron.

HARRY G. PFANN, formerly with the research department of the Stamford (Conn.) Laboratory of the American Cyanamid Co., is now senior chemist in the butadiene division of the Koppers United Co., Pittsburgh, Penna.

FRED W. CLIMER, after three and a half months with WPB, during which he was in charge of a staff assigned to joint labor-management production drives, has returned to the Goodyear Tire & Rubber Co. as assistant to E. J. THOMAS, president of the company. He rounded out 25 years of service with Goodyear last June and served as personnel director from December 1, 1938, until he was "loaned" to the Government last October.

DR. KARL KAMMERMEYER, who has been engaged in research and development work for several oil companies in recent years, has been named director of chemical and chemical engineering research for the Publicker Commercial Alcohol Co., Philadelphia, Penna.

LYLE F. WATTS, former regional forester from Portland, Oregon, who has been serving in recent months as assistant to Secretary of Agriculture WICKARD, has been appointed chief of the Forest Service of the Department of Agriculture. The Forest Service is responsible for the Guayule Rubber Emergency Project.

DR. SIMON WILLIAMS, associate director of the Bureau of Industrial Chemistry at the University of Texas, has been named director of research of the National Cotton Council. The Council maintains headquarters in Memphis, Tenn.

H. L. RIDDLE, JR., assistant treasurer of the Goodyear Aircraft Corp. since February, 1942, has been named assistant comptroller of the parent Goodyear Tire & Rubber Co., Akron, to succeed the late C. L. WEBERG. He has been with the company since 1928.

DR. WILLIAM W. SKINNER, who has been associated with the Bureau of Agricultural Chemistry and Engineering of the Department of Agriculture since 1904, was recently appointed chief of that bureau to succeed the late HENRY G. KNIGHT. He has been associate chief since 1939.

A. E. LAURENCE, formerly chief chemist of the Solo Works Division of the Perfect Manufacturing Co., Loveland, Ohio, is now with the development department of the Thiokol Corporation at Trenton, N. J.

HAROLD P. BROWN, formerly chairman of the chemistry department at the University of Kansas City, recently joined the synthetic rubber division of the B. F. Goodrich Co., at Akron, where he will engage in research development.

M. C. BROCKMANN, until recently a research chemist for Hiram Walker & Sons, Inc., is now associated with Joseph E. Seagram & Sons, Inc., Louisville, Ky., as supervisor of the alcoholic division in the research and development department.

H. V. SMITH, formerly chief chemical engineer and head of the technical department of the Barber Asphalt Corp., Barber, N. J., recently joined the Lummus Co., New York City, as job engineer of the company's synthetic rubber projects division.

J. WARREN KINSMAN, assistant general manager of the Plastics Department of E. I. du Pont de Nemours & Co., Inc., has been appointed assistant general manager of that company's Organic Chemicals Department. He succeeds the late CESARE PROTTO.

ERIC BONWITT, dealer in used rubber machinery, with offices in Akron, Ohio, has donated his fourth pint of blood to the Blood Bank of the American Red Cross. MR. BONWITT has a son in the Army.

Washington Appointments

CURTIS E. CALDER, president of the American and Foreign Power Co., who has been serving with WPB since November, 1942, was recently appointed Director General for Operations, succeeding ERNEST KANZLER, who resigned.

I. H. ALBERT, president of L. Albert & Son, dealers in new and used rubber and other equipment, of Trenton, N. J., and Akron, Ohio, has joined the Office of the Rubber Director in an advisory capacity.

HAROLD A. STALDER, secretary and assistant to J. J. Blandin, manager of the crude rubber division of the Goodyear Tire & Rubber Co., has been appointed junior administrative assistant for the Rubber Reserve Co. He will be stationed in Brazil.

Pechukas Becomes Research Director

Dr. Alphonse Pechukas

Dr. Alphonse Pechukas, who first entered the company's service as a laboratory research worker in 1937, and who has been serving as acting director since May, 1942, has been appointed research director of the Columbia Chemical Division of the Pittsburgh Plate Glass Co. Dr. Franklin Strain has been named assistant research director. Dr. Pechukas was born and educated in Chicago, receiving a B.S. degree from the University of Chicago in 1934 and a Ph. D. in 1937. He is only 28 years old and hence has the distinction of being among the youngest directors of research in the industrial field. Dr. Strain received his Ph. D. in organic chemistry from the University of Kansas in 1933 and became graduate instructor at that university. He was associated with Luzier's, Inc., and the Behr-Manning Corp., before joining Pittsburgh Plate Glass in 1937. Both men are members of the A.C.S.

Repairing Damaged Rubber Goods

Both industrial and consumer type rubber goods, which comprise fabric backing of some kind, can be effectively repaired and returned to service by means of Press-On Mending Tape, a product of Press-On, Inc., 16 West 61st St., New York City. Boots, overshoes, aprons, coats, gauntlets, and other products, which have become torn or worn through in small spots can be repaired by applying the mending tape to the fabric side. Adherence is secured by the application of heat furnished by a laundry, curling or soldering iron. The tape, which utilizes a vinyl resin as adhesive, holds firmly and is waterproof. If the spot mended is subject to hard wear, two or three layers of tape, one over the other, is recommended. The tape is supplied in 12 different colors and is supplied in 100-yard rolls for industrial use.

Booklet on Accelerators Available

In view of the large number of organic accelerators on the market today, and in view of the variety of their chemical compositions, the Educational Committee of the Office of the Rubber Director has had a complete list of such accelerators compiled and has issued a booklet under the title of "Organic Accelerators of the Vulcanization of Rubber." The booklet not only lists organic accelerators by chemical classification, but also includes the names of suppliers of each separate type. All organic accelerators currently on the market which have been found useful or may be expected to be found useful in Government Synthetic Rubber, either as primary accelerators or as activating accelerators or as vulcanization agents in stocks not containing added sulfur, are included. The list was compiled by Paul C. Jones of Goodrich. Copies of the booklet are available to chemists, compounders, etc., on request, using company letterheads only. Address: Educational Committee, Office of the Rubber Director, War Production Board, New Municipal Building, 4th and D Streets, N. W., Washington, D. C.

Tyron is Name for New Yarn

The high tenacity rayon yarn for tires now being produced by the Industrial Rayon Corp., Cleveland, Ohio, by its exclusive continuous process method, will be called "Tyron." As previously announced, the company's parent plant is now being converted for the production of this yarn to be used in the manufacture of military tires.

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Marlor Named Vice-President

Henry S. Marlor

Henry S. Marlor, general manager of the footwear division of the U. S. Rubber Co., and associated with that company for the past 32 years, has been elected a vice-president, director, and a member of the executive committee. Mr Marlor started as a mill hand in one of the company's tire plants, advanced in subsequent steps to foreman, assistant superintendent and factory manager in tire and footwear plants, and assumed responsibility of quality control over the products of 13 footwear plants in 1927. Two years later he was made assistant general manager of the footwear division and in 1939 was promoted to general manager. Last year he was given the additional assignment of general manager of the airplane fuel cell division. Elmer H. White, assistant general manager of the footwear division, has been appointed general manager to succeed Mr. Marlor. It was also announced that Charles Heitzmann has been named executive assistant to Herbert E. Smith, president of the company.

Rubber-Canvas Jungle Boot

A rubber and canvas jungle boot to replace the standard issue service shoe, which has been found unsatisfactory in jungle and tropical service, has been designed and developed by the Quartermaster Corps. The new footwear has a rubber sole and cloth top about 12 inches high. The sole contains both crude and reclaimed rubber and is not affected by jungle moisture or soil chemicals. The cloth top, dyed an olive drab, provides a cool, porous covering for the foot and lower part of the leg, and prevents leeches and thorns from reaching the skin.

FINANCIAL NEWS

Armstrong Rubber Company

Year Ended September 30: Net profit of $380,559, after provision of $198,255 for Federal income taxes, which is equal to $5.03 each on 75,690 shares of A and B stock, which compares with $478,107, or $6.32 each on 75,668 shares in the preceding fiscal year. The condensed balance sheet as of September 30, 1942, shows total current assets of $1,986,850, including $109,029 cash on hand and on deposit, $662,377 trade acceptances and accounts receivable, and $1,215,442 inventories, which compares with total current assets of $2,656,458 at the end of the previous fiscal year. Total current liabilities amounted to $1,354,067 and $1,724,944, respectively.

Mohawk Rubber Company

Year of 1942: Net profit of $348,947 which, after all expenses including $228,000 for taxes and $49,207 for depreciation, is equal to $2.46 a share on 141,638 shares outstanding. Profit for the previous year amounted to $206,276. Total sales reached $3,685,505, which compares with $3,641,994 reported for 1941. During 1942, the company cancelled a mortgage on buildings and equipment which had existed since 1928, the final debenture payment on which was to mature in 1948. After cancellation of the mortgage, a payment of 50c a share was made to stockholders, the first such payment since 1929.

Will Reduce Pioneer Stock

Stockholders of the Pioneer Rubber Co., meeting in Willard, Ohio, on January 19, voted to reduce the capital stock from $300,000 to $200,000. It was explained that the change would not affect the value of the stock, but would result in some decided advantages to the company. Reports showed that sales during 1942 amounted to more than $900,000, the highest in the company's history. It was also revealed that the company, originally organized to manufacture toy balloons, is now devoted almost entirely to the manufacture of war products, including surgeon's and industrial gloves.

New Jersey Zinc Company

Year of 1942: Net income of $7,231,396, after Federal taxes and other charges, equal to $3.68 a share on outstanding stock, which compares with $9,592,871, or $4.88 a share, reported for the previous year. Net income for the fourth quarter of 1942 was $1,750,606, or 89c a share, against $2,559,481, or $1.30 a share, in the final quarter of 1941.

Rome Cable Corporation

Nine months ended December 31: Net profit of $215,064, after tax provision of $503,516, which is equal to $1.13 a share, and which compares with $392,441, or $2.07 a share, after taxes of $608,966, in the corresponding period of the previous fiscal year. Net profit for the December quarter amounted to $97,546, equal to 51c a share, against $51,620, or 27c a share, in the preceding quarter, and $150,059, or 79c a share, in the corresponding quarter of 1941.

Penalize Baldwin Rubber Co.

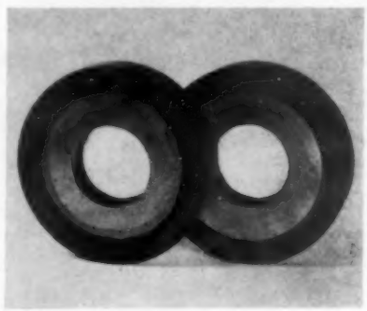
Stringent penalties have been imposed on the Baldwin Rubber Co., Pontiac, Mich., following that company's violation of the rubber conservation order, according to an announcement by WPB on February 5. Suspension Order S-225, directed against the company, charges it with the manufacture of rubber soles for civilian shoes after such use of rubber had been barred by Supplementary Order M-15-b. In less than a month's time, the company, with full knowledge of the order, according to the charge, processed more than 35 tons of reclaimed rubber for prohibited uses. The penalty order, in effect for nine months, prohibits the company from changing in any manner the form or chemical composition of crude, reclaimed and synthetic rubber or latex, except for war orders as defined in M-15-b. During the first 30 days of the penalty period, orders of the Chemical Warfare Service, placed in advance of the issuance date of the suspension order, are also exempt from these restrictions.

Introduces Substitute Soles

A varied line of substitute shoe soles, designed to replace rubber and leather soles, has been developed and introduced by Elliot E. Simpson, associated with L. Drexsage & Co., New York City. The line includes "tractor soles," made from separate pieces of wood and adhered with plastic cements to sheetings; "cordease" soles, made of cord hardened, chemically-treated and combined with plastics; "rug-ged" soles, made of tightly-woven rug fabric, water-proofed, hardened and shrunk, and then combined with plastics; "lacette" soles, made from 7 to 10 yards of lace in any color, the lace being hardened, chemically-treated and worked with plastics. All of the combination processes used in the manufacture of these soles are said to have been developed by Mr. Simpson.

Steel-Jacketed Press Rolls

New steel jacketed Vulcalock press rolls, principally used by paper mills, were recently introduced by the B. F. Goodrich Co., Akron, Ohio. The construction of the new roll permits an average saving of about 25% in the rubber needed to cover the press roll. The steel jacket is welded over a cast iron core, thus making possible a cover which is all soft rubber. The rubber cover is made more dense, more homogeneous, and tougher, by using the hydraulic cure method of vulcanization under high pressure. Application of the Vulcalock Process bonds the rubber to the steel jacket with an adhesion as strong as the rubber itself. The accompanying photograph shows a cross section of the new type rubber cover on the right with a cross section of the older-type construction on the left.



Synthetic Hydraulic Accumulators

Successful adaptation of synthetic rubber for hydraulic accumulators used in military and commercial airplanes was recently announced by the Goodyear Tire & Rubber Co., Akron, Ohio. Chemigum of sufficient flexibility and resilience to warrant the replacement of other types of compounds for this purpose is said to have been developed and exhaustive tests are now being conducted. The synthetic rubber diaphragm within the accumulator separates the air, via which pressure is exerted, from the reserve fluid supply.

IN THE SERVICE

NELSON W. PICKERING, president of the Farrel-Birmingham Co., Inc., Ansonia, Conn., a captain in the U. S. Naval Reserve, has been ordered to report for active duty as Commander of the U. S. Navy Section Base at New London. He has resigned from the company.

R. H. NAYLOR, assistant general credit manager of the Goodyear Tire & Rubber Co., Akron, since 1935, has received a commission as lieutenant in the Navy and has already been assigned to the Boston Navy Yard as assistant to the supply officer.

SCIENTIFIC PERSONNEL ROSTER NOW LISTS MORE THAN 500,000

Detailed information concerning the qualifications of more than 500,000 of the Nation's scientists and professional men and women has been catalogued by the National Roster of Scientific and Specialized Personnel and over 140,000 names have been certified to agencies engaged in the war effort, according to a report released by the National Resources Planning Board. Not only have the various war agencies received the names of thousands of individuals for full time positions, but they have also obtained the services of many scientific leaders to serve as consultants for short periods of time.

In cooperation with the Selective Service System, the roster is continuing the task of completing the registration of all men from 18 to 65 years of age who have scientific or professional training or experience. Many of the most eminent scientists of America have collaborated in devising classification methods which can produce from a central register any desired combination of scientific skills within a few hours' time.

The central organization of the roster was established jointly by the United States Civil Service Commission and the National Resources Planning Board in June, 1940, as a precise index of the country's scientists and other specially qualified citizens. The job of developing and administering the roster was placed in the hands of Dr. Leonard Carmichael, president of Tufts College and internationally known psychologist, who was named director; and of James C. O'Brien, experienced Civil Service Commission executive, who was appointed executive officer. The roster now functions under the Manpower Commission and is associated with its Bureau of Placement.

The report says: "Trained personnel is a national resource indispensable to the prosecution of the war. In a period such as the present, which witnesses an emergency expansion of America's armed forces, America's industry, and America's governmental structure, it is obvious that the national interest will be advanced by the use of every appropriate measure to make proper contact between the right man and the right job."

Polyset—New Plasticizing Agent

Polyvinyl butyral can be cured with a new combination plasticizing and curing agent developed by the Glyco Products Co., Inc., Brooklyn, N. Y. The new agent, which has been termed Polyset No. 35, needs no additional plasticizer and requires no change in the usual method of processing. It can be easily calendered, extruded, cement-spread or press molded, according to Glyco, and cures by heat, becoming permanently thermosetting and solvent insoluble with a marked increase in tensile strength.

Crop Production Specialists

The U. S. Civil Service Commission has sent out a call for persons with a practical knowledge of the production of rubber and oil-producing crops and other tropical plants, including the procurement of wild rubber. The positions range from the assistant grade at $2,600 a year to chief crop production specialist at $8,000 a year. While some positions will be filled in the United States, a majority of them will be filled outside its continental limits, particularly in the South and Central American countries. Persons appointed will do work in connection with the establishment and operation of research stations or plantations growing rubber or oil-producing plants. Duties will involve making surveys of the country to determine the selection of proper sites, soils and other essential factors. There are no age limits and no written examination will be given. Applications and complete information may be obtained at post offices, civil service regional offices, and from the U. S. Civil Service Commission at Washington, D. C.

New Charges Against Anaconda

The Federal Grand Jury at Providence, R. I., handed down an indictment on January 14 against the Anaconda Wire & Cable Co., of Pawtucket, and five individuals on charges of conspiring to defraud the Government and present false claims in connection with wire and cable produced for the U. S. and British armies. Individuals indicted were William H. Morley, assistant general manager of all Anaconda mills; Jacob Eagleson, manager of the Pawtucket plant; Lowell K. Morrow, chief inspector; Robert L. Wright, electrical engineer; and William Eagleson, supervisor of the electrical test room. Mr. Wright resigned from the company last June. The charges are similar to those previously made against the Marion, Indiana, plant of the company. According to H. D. Keresey, president, the company is making a complete investigation of all charges.

N.A.W.M.D. to Hold Meeting

The National Association of Waste Material Dealers will hold its 30th Annual Convention and Wartime Conference at the Hotel Sherman in Chicago on March 16 and 17. Since the Association eliminated its Fall Convention last year, the coming convention represents the only opportunity the waste material trade will have this year for an industry get-together.

RUBBER DIVISION, A. C. S. SETS DETROIT MEETING DATES

As announced in the previous issue, the Division of Rubber Chemistry of the American Chemical Society will hold its regular Spring Meeting in Detroit, Mich., in conjunction with the 105th Meeting of the parent society. It has since been announced that the Division will meet on Thursday and Friday, April 15 and 16. As at former meetings in Detroit, the Division will have its headquarters at the Book Cadillac Hotel, with all technical sessions at the Masonic Temple. The Divisional banquet will be held at the Book Cadillac on Thursday evening, April 15.

Although no formal symposium is planned for the meeting, the principal theme will again be synthetic rubber. All are cordially invited to submit a paper on this subject or any other topic dealing with rubber technology. The deadline for sending in abstracts of 200 to 250 words, in triplicate, on any planned paper, is February 15. Complete manuscripts of papers dealing with synthetic rubber must be submitted, in triplicate, by March 22. Abstracts and papers should be sent to the secretary of the Division, Dr. H. I. Cramer, c/o Sharples Chemicals, Inc., Philadelphia, Penna.

The Detroit meeting will be a war meeting, with no plant trips and a minimum of entertainment. It is again emphasized that no one should attend the meeting unless his train and hotel reservations are definite.

Tire Yarn Finds New Uses

The most outstanding event in the cotton yarn market in 1942, according to a recent statement by George C. Buscher of the Buscher Yarn Division, Turner Halsey Co., New York City, was that due to the shortage of rubber the large tire manufacturers, owning their own mills, put many million pounds, possibly as much as 100,000,000 pounds, of yarn on the market for resale. This yarn went to carpet, upholstery and other plants, and if it had not come on the market the demand for Government duck could not possibly have been satisfied, in Mr. Buscher's opinion.

Another Plant for Cabot

Through one of its subsidiaries, Godfrey L. Cabot, Inc., of Boston, Mass., has made application to the Louisiana Department of Conservation to build a large furnace-type carbon black plant in Evangeline Parish for the additional production of Sterling brand semi-reinforcing black. The plant would use waste residual gas from an adjacent gasoline plant and will be similar to that now under construction at Guymon, Oklahoma. Both projects are reported to have been granted high priorities by WPB.

NEWS IN BRIEF

According to a recent announcement by the Atchison, Topeka & Santa Fe Railway, about fifty cars are being equipped with "Flexitanks" to enable them to carry liquid cargoes, such as petroleum products. These "Flexitanks" are canvas containers treated with "Faraprene," and were developed by the Soldine Corp., Evanston, Ill.

The aluminum model Dustfoe Respirator, manufactured by the Mine Safety Appliances Co., Pittsburgh, is now available in an all-plastic model. Known as the Clear-Vue Model Dustfoe, it is made of transparent plastic, and is durable, odorless, non-corrosive, and a non-conductor of electricity and heat. The self-adjusting facepiece has a new form-molded sponge rubber face cushion.

The entire output of Pliofilm is now being used as plane engine coverings, according to a report from Goodyear. Use of Pliofilm for this purpose, it was stated, saves from 50 to 75 man-hours ordinarily needed to grease and degrease each engine.

A new adhesive, under the name of "Vegimal," has been introduced by Paisley Products, Inc., 1770 Canalport Ave., Chicago. It is a viscous, light tan colored liquid, weighs 50 pounds per gallon, and is said to work well with wood, paper, cardboard, fabrics, leather, imitation leather, etc.

Drain stoppers molded of Lumarith plastic, designed to replace those made of rubber, have been introduced by the Kampa Manufacturing Co., Milwaukee, Wisc. The new stoppers are said to be clean, attractive, and light in weight.

Cottonleather, a recent development of the Southern Friction Materials Co., Charlotte, N. C., has been introduced as a substitute for rubberized fabric and leather. It is a multi-ply fabric, treated with chemicals to provide density and durability, and surface treated to give flexibility and leather-like nature. It is available at present in sizes from 1 x 5/32-inch to 6 x 5/16-inch, with one or both sides ground to a dense tan leathery surface.

The 1943 edition of the "A-B-C of Income Tax Returns" is currently being distributed by the General Atlas Carbon Division of General Properties Co., Inc., Pampa, Texas. The booklet, copies of which are available on request to the company, tells how to save, what to deduct, and what to pay.

American Mat Corp., Toledo, Ohio, has introduced flexible wood link matting designed to replace rubber link matting for the duration. The new type matting can be folded up easily for handling and cleaning, and comes in three stock sizes: 18x32, 24x38, and 30x44 inches. It can be manufactured in special widths up to 36 inches and in any length desired. The ends of the matting are beveled to reduce the danger of tripping.

The increasingly important role being played by the Firestone Tire & Rubber Co. in the overall war effort is excellently portrayed in a new booklet issued by the company under the title, "All Out for Victory at Firestone." Not only rubber products, but the growing list of metal and plastics products being made by the company are illustrated and briefly described.

A special edition of "The Goodrich Circle," house organ of the B. F. Goodrich Co., has been issued to commemorate the awarding of the coveted Army-Navy "E" to the Akron plants of the company. In addition to reproducing portions of the speeches made at the ceremonies, the edition depicts the many products made by the company for military use.

A course on Principles and Practice of Synthetic Rubber Manufacture has been added to the list of those offered this year by the College of Engineering of New York University. It is one of several war training courses offered tuition-free in the evening under the sponsorship of the U. S. Office of Education.

Chemical & Metallurgical Engineering, 330 West 42nd St., New York City, is currently offering a portfolio of reprints of articles on synthetic rubber which have appeared in *Chem. & Met.* and other McGraw-Hill publications. The complete portfolio, which bears the title "Editorial Articles About Synthetic Rubber," is offered at a price of only $1.50.

"Understanding Your Income Tax" is the title of a new booklet prepared by the National Association of Manufacturers, 14 West 49th St., New York City, designed primarily for manufacturers to distribute to factory workers. The booklet has 16 pages and covers the fundamental points of the tax. Copies are available at a cost of $3.00 to $4.00 per hundred, depending on quantity.

A new electronic device which signals and measures ice forming on airplanes in flight and automatically operates the plane's De-Icers has been developed by the Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. The Ice Indicator, as it is called, provides the pilot with information on the thickness and rate of accumulation of ice on exposed plane surfaces.

"Let's Get in the Scrap" is the title of a new industrial film prepared by the National Association of Manufacturers, 14 West 49th St., New York City, with the approval of the Conservation Division of WPB. It educates executive personnel on how to organize and successfully conduct an in-the-plant metal salvage campaign. Further details may be secured from the Association.

A contract for brick settings for 20 boilers for a Butyl Rubber project in the southwest has been awarded to the Rust Engineering Co., Pittsburgh, Penna., by the Stone & Webster Engineering Corp. To conserve materials, boilers previously used in an industrial installation in the east will be transported to the rubber project and utilized.

Illustrating the rate of which non-rigid airships are being produced for anti-submarine patrols, about 2,000 airship builders at the Goodyear Aircraft Corp. have received production bonuses. Workers in 12 departments received a bonus of 10%, while those in a department which makes control fins alone received a 15% bonus. The bonus is figured on each employee's monthly salary.

U. S. Rubber has completed a new 16 mm. film in black and white with sound track under the name, "Rubber Goes to War." The film depicts the manufacture of various war products made by the company's footwear division, including barrage balloons, life-saving suits, pontons, self-sealing gasoline tanks, etc. It has two reels, has a running time of 21 minutes, and can be borrowed without cost.

WHO'S WHO IN WASHINGTON

The Who's Who in Washington page, which has been a feature of this section for the past few months, is omitted from this issue. There have been many changes made in recent weeks, particularly in the Office of the Rubber Director, and the editors were unable to secure complete verification of these changes by press time. The page will re-appear in the next issue.—Editor.

LOS ANGELES NEWS

The 1943 Year Book of the Los Angeles Rubber Group now in the hands of members shows several new features not included in the last edition. The new book has pictures of the officers as well as pictures and a description of the big summer "outing" at the Uplifters Club, Santa Monica, last July. Another new feature is a resumé of all the meetings held during the past year. The cover has been changed to a different color as a means of identification.

The Technical Rubber Company is the name of a new rubber appliance manufacturing concern organized in Los Angeles, headed by Charles Lamb, Jr. The intent is to erect a factory building immediately but in the meantime downtown offices are being occupied. Abrasive wheels will be the chief item manufactured, according to Mr. Lamb, but oil well supplies and other mechanical goods are included in the list of prospective items.

William R. "Bill" Reeder, who had been manager of purchases for the U. S. Rubber Company for several years, died on January 16th after a brief illness. Mr. Reeder, who was fifty-one years old, leaves his widow, one son, and one daughter. He had taken an active part in the programs of the Los Angeles Rubber Group for several years.

Dick Cotton of London, England, managing director of the British Rola Company, spent some time in Los Angeles recently, calling particularly upon Leonard Smith of the Ideal Electric Company. The trip to America was made by plane, Mr. Cotton flying from Ireland to a point south of Dakar in Africa, from there to Trinidad, and from there to the mainland of the United States. His company manufactures airplane parts, including certain parts for the Rolls Royce engine.

F. H. Banbury, inventor of the Banbury Mixer, who is connected with the Farrel-Birmingham Company, and whose home is in Ansonia, Connecticut, is spending a portion of the winter in Los Angeles, staying at the Ambassador Hotel.

Paul Shoaff, Jack Lockridge, Al Rowlin, and Gordon Boelter have arrived in Los Angeles from Akron, Ohio, to remain permanently. They will head departments in the new synthetic plant of the Goodyear Tire and Rubber Company.

Ray Sexton, manager of the Rainbow Room at the Mayfair Hotel, who has been host to the Los Angeles Rubber Group monthly for many years, has been absent for two months due to an operation for appendicitis and also because of the death of his mother. Sympathies were expressed by the Group. He expects to be back at his post of duty for the March meeting.

Harold Brandt, formerly connected with Goodrich in Los Angeles but later transferred to the east, was in Los Angeles in February visiting old friends.

Lee Horchitz of Goodrich has returned from a trip east. He visited Akron and other cities.

Carl Faulhaber, proprietor of the Faulhaber Rubber Company, was married on December 31st in Huntington Park to Miss Alice Elliott of Shelton, Washington. The honeymoon was spent at Palm Springs. The family residence is at 8456 San Vincente Avenue, South Gate.

Bill Haney, factory superintendent for the Kirkhill Rubber Company, is going about on crutches as a result of an injury to one of his feet. He reports, however, that no permanent damage has been done.

L. F. MacDonald who served the Rubber Group efficiently as treasurer for some years and who recently has been employed by the Cal-Ship Company, has taken up new duties which will keep him in the east most of the time in the future. He has accordingly resigned all offices in the Group but is continuing his membership with the hope that some day he may live again permanently in the land of perpetual sunshine.

Walter Graham has resigned his position with the Charles T. Wilson Company, Inc., New York City, but has not announced his future plans. Before going to New York he was the Pacific coast representative of Reinke, Hiller & Amende. He was succeeded in Los Angeles by C. M. Reinke.

Ernest H. Long, manager of the Golden State Rubber Mills, Inc., who has been confined to his bed for two months, is able to be down at his office again part of the time. He attended the February meeting of the Los Angeles Rubber Group.

John Hoerger, local manager for A. Schrader's Son, who has been quite seriously ill for some weeks, is reported as being very much better.

Frank L. Shew, who has been connected with various Los Angeles rubber factories in the capacity of a chemist, is now in Washington, D. C., where he is classified as a senior industrial engineer, most of his work being in connection with rubber products.

Curtis R. Wolter, treasurer of the Los Angeles Rubber Group, spent two weeks recently in Detroit, Michigan, on matters of business connected with the U. S. Rubber Company.

Seymour Hull has arrived in Los Angeles from Detroit and will serve as manager of purchases and materials for the U. S. Rubber Company, taking over the work of the late William R. Reeder

Gordon Shimer, who is connected with the New York City offices of the U. S. Rubber Company, is in Los Angeles temporarily but expects to return to New York soon.

Snell Expands Rubber Department

Foster D. Snell, Inc., consulting research laboratory of Brooklyn, N. Y., has announced the expansion of its Rubber and Plastics Department. This department is in charge of Theodore G. "Ted" Sullivan, who has been closely associated with the rubber industry since 1918, and who recently joined the Snell organization. Mr. Sullivan's experience in the rubber field has included work at the Lewis Recovery Corporation on rubber solvent recovery plants, as well as for Wishnick-Tumpeer, Inc., where he was in charge of the division then engaged in work on rubber pigments and colors. Together with John De C. Van Etten, he organized Vansul, Inc., to manufacture and sell rubber dispersed colors and some special rubber chemicals. In more recent months, Mr. Sullivan headed the rubber division of the Harmon Color Works at Haledon, N. J.

Ted Sullivan

CANADIAN NEWS

Under recent orders issued by A. H. Williamson, Rubber Controller, three committees have been set up to confer with and advise the Department of Munitions and Supply with respect to the synthetic rubber program, the use and substitution of synthetic for natural rubber, and better utilization of remaining crude rubber supplies.

Under Order Number Rubber One, the Rubber Advisory Committee was re-established and continued. This committee includes: Chairman, James I. Simpson, Dunlop Tire and Rubber Goods Company, Ltd., Toronto, representing mechanical goods; William H. Funston, Firestone Tire and Rubber Co., Ltd., Hamilton, representing tires; George S. Sawin, B. F. Goodrich Rubber Company of Canada, Ltd., Kitchener, representing tires; Albert G. Partridge, Goodyear Tire and Rubber Company, Ltd., New Toronto, representing tires; Paul C. Jones, Dominion Rubber Company, Ltd., Montreal, representing footwear; J. Godfrey Smith, Federal Wire And Cable Company, Ltd., Guelph, and Harold S. Ireland, Canadian General Rubber Company, Ltd., Galt, representing other consumers of rubber.

Under Order Number Rubber Two, the Synthetic Rubber Technical Advisory Committee was re-established and continued. This committee now includes: Chairman, Dr. G. Stafford Whitby, Akron, Ohio; J. R. Nicholson, Polymer Corporation, Ltd., Toronto; Dr. Willis A. Gibbons, U. S. Rubber Co., Passaic, New Jersey; Dr. D. M. Morrison, Montreal; Dr. R. K. Stratford, Sarnia; Dr. H. B. Speakman, Ontario Research Foundation, Toronto; E. R. Rowzee, Canadian Synthetic Rubber, Ltd., Toronto; R. H. Boundy, Dow Chemical Company, Midland, Michigan; William B. Wiegand, Columbian Carbon Company, New York.

Under Order Number Rubber Three, a Rubber Conservation and Technical Committee has been set up. This committee consists of: Chairman, W. R. Walton, Jr., Toronto; M. H. Kryder, New Toronto; H. T. Humby, Hamilton; C. L. Brittain, Toronto; C. Cattran, Bowmanville; H. Wolfhard, Kitchener; N. A. Austin, Granby; W. H. Eastlake, Montreal; O. W. Titus, Leaside; W. H. Shaw, New Toronto; J. A. Wilson, Toronto; Frank H. Cressman, Kitchener; E. D. Jackson, Welland; E. S. Young, Toronto; C. C. Thackray, Montreal; and John Ramsay, Toronto.

Beginning this month, a limited number of tires manufactured from all reclaimed rubber will be rationed among owners of a selected list of motor vehicles. Vehicles for which permits to buy the new tires will be issued, include, in order of preference: passenger cars used to drive groups of workers to and from work under the wartime industrial transit plan; taxis and drive-yourself cars; mail carriers' cars; cars used to transport produce by farmers who do not own trucks.

According to Rubber Controller Williamson, other classes of motorists "will have to wait until the war is over before any type of rubber, whether crude, reclaimed or synthetic, can be released to make his tires."

Two recent orders affecting rubber products are W.P.T.B. Order A-499 restricting the amount of rubber thread to be used in medical garments and W.P.T.B. Order A-542 which limits the number of rubber tire reliners or patches any manufacturer may make to the number he made in 1941.

According to figures compiled by the Dominion Bureau of Statistics there has been a steady and increasing reduction in employment in civilian industry in recent months.

In the rubber industry, employment had decreased 12.2 per cent on October 1, 1942, below the same date the previous year. Based on the 1926 average as 100, employment in 1942 was 125.9 compared with 143.5 in 1941.

R. C. Berkinshaw, general manager and treasurer of the Goodyear Tire and Rubber Company, Ltd., was recently elected a director of the Mutual Life Assurance Company of Canada. Mr. Berkinshaw was chairman of the Wartime Industries Control Board until he resigned to become president and treasurer of Polymer Corporation, Ltd.

Due to expanding operations, two important appointments have been made to the administrative staff of the Dominion Rubber Co., Ltd.

F. W. McMaster has been made director of the central industrial engineering department, which has been reinstated after a lapse of twelve years. Mr. McMaster, a native of Trenton, Ontario, is a graduate of McGill University.

Paul S. Smith has been made head of the newly-established legal department of the company. Mr. Smith also graduated from McGill. He formerly was a member of the legal firm of Hyde, Ahern, and Smith, Montreal.

A banquet honoring thirty-three employees of Dominion Rubber who had completed twenty-five years service with the company was held recently in Montreal. President Paul C. Jones paid tribute to the group in a brief congratulatory talk. Other speakers included: W. A. Eden, vice-chairman of the board; G. W. Charles, vice-president; J. M. S. Carroll, J. W. Jones, R. J. McLeod and George Latulippe.

Canada now ranks among the leading countries of the world as a manufacturer of rubber goods, reports the Dominion Bureau of Statistics, General Manufactures Branch, in a summary of the industry for 1941 recently issued. Normally Canada is the sixth largest importer of raw rubber in the world, ranking after the United States, United Kingdom, Japan, Germany and France.

Establishments manufacturing rubber tires, rubber footwear and other rubber goods numbered 56 in 1941, with total capital investments of $71,985,540. They produced goods valued at $119,137,776 from materials costing $59,340,321. This industry is practically confined to the provinces of Ontario and Quebec.

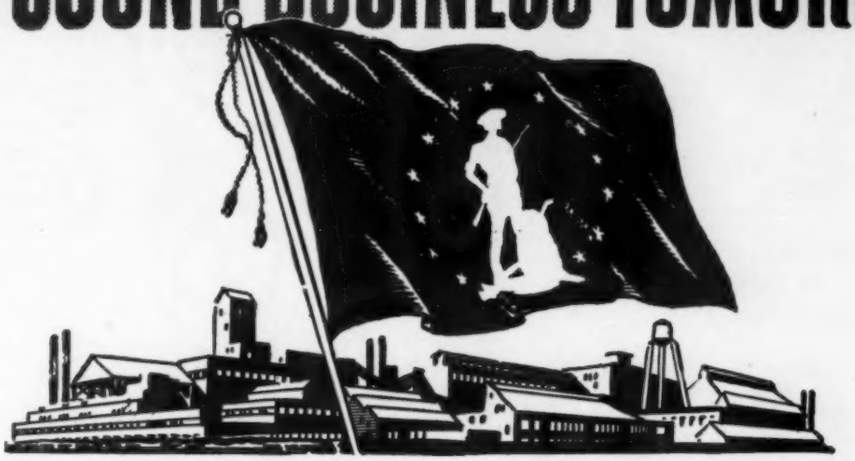
The value of production in 1941 was considerably higher than that of the previous year. The volume of footwear decreased slightly from 17,243,347 pairs in 1940 to 17,062,961 pairs in 1941, but the value increased from $19,528,586 to $21,844,601. The miscellaneous section of the rubber industry, which includes such products as rubber heels and soles, rubber belting, hose, medical and druggists' supplies, mechanical rubber goods, etc., increased its production from $21,932,403 in 1940 to $33,262,549 in 1941. For the rubber industry as a whole, there was thus an increase of $36,117,055 in the value of production. There was also an increase of $21,112,176 in the cost of materials used.

Of the three main classes of products manufactured in this industry in 1941, rubber footwear accounted for $21,844,601 or over 18 per cent. Compared with the previous year the output of rubber footwear increased by $2,316,015 or almost 12 per cent.

Goodall Synflow Lining

A synthetic rubber compound in a heavy liquid or plastic state than can be applied to surfaces of almost any shape or size, was recently introduced under the name of "Synflow" by the Goodall Rubber Co., Inc., Philadelphia. Any desired thickness and durometer reading can be built up with the new lining material. Adhesive to cast iron or steel uses 600 p.s.i.; on alloys, such as brass and aluminum, 450 p.s.i. Synflow, according to Goodall engineers, is applicable to practically every type of metal, ceramic or concrete process handling equipment. Badly pitted surfaces are said to offer no problem as long as they can be cleaned. If it is not practical for the equipment to be lined to be brought to the company's factory, Synflow lining equipment can be brought to the equipment almost anywhere in the United States by means of sleeper-cab trucks. The Goodall Rubber Co. controls the Whitehead Bros. Rubber Co.

FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW



Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Payroll Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.

EVERYBODY EVERY PAYDAY AT LEAST 10%

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War Savings Bonds

This Space Is a Contribution to America's All-Out War Program by

THE RUBBER AGE

OBITUARIES

C. Edward Murray

Charles Edward Murray, president of the Crescent Insulated Wire & Cable Co., Trenton, N. J., died at his home in Trenton on January 12 after a prolonged illness. He was 80 years of age. In 1905 Mr. Murray was appointed quartermaster general of the New Jersey National Guard.

General Murray was born in Lambertville, N. J., in 1863. He attended elementary, high and business schools and after being graduated from the latter he joined his father in the rubber reclaiming firm of Murray, Whitehead & Murray, which was subsequently succeeded by the Assanpink Rubber Co. In 1893 he organized the Crescent Belting & Packing Co. and the Crescent Insulated Wire & Cable Co., of which he was president until his death.

In 1902 General Murray established the Empire Rubber Co. and a few years later the Empire Tire Co. In 1913 these two firms were combined and as an outgrowth of the combination the Murray Rubber Co. was formed in 1922. In addition to these activities, General Murray was also general manager of the Lambertville Rubber Co. from 1919 to 1924. Lambertville Rubber was taken over by Servus Rubber Co. a few years ago.

General Murray, in his younger days, was active in Republican circles in Trenton. In 1894 he was named city clerk, retaining that position for ten years. His military career started in 1885 when he joined the Seventh Regiment of the New Jersey National Guard. He served as paymaster for that regiment from 1895 to 1899, retiring shortly thereafter with the rank of captain. In 1905 he was appointed quartermaster general and served in that capacity until his retirement in 1934. In recognition of his achievements with the Guard, he was awarded the Distinguished Service Medal by the state. A widow, two sons, and a daughter survive.

Kreigh B. Ayers

Kreigh B. Ayers, research chemist associated with the Goodyear Tire and Rubber Co. for the past twenty-five years, more recently serving with the Goodyear Aircraft Corp. because of his knowledge of electrochemical processes, died on February 3 at St. Thomas Hospital in Akron, at the age of 52, a few days after he was stricken with a heart attack. Mr. Ayers was a life-long deaf mute, which proved no barrier to his career.

Mr. Ayers was born in Akron and raised in Lakewood. He received his education at the State School for the Deaf at Columbus, Ohio, and at Gallaudet College, Washington, D. C., the latter conferring upon him the honorary degree of master of science in 1939. He returned to Akron in 1917 and spent the remainder of his life there. During his entire lifetime he served as a leader of the deaf, principally in Akron. He also organized and fostered the famous Goodyear Mutes' football team, which became one of the most famous gridiron organizations in Ohio.

Louis P. Arnold

Louis Philip Arnold, a director and former vice-president of the Norwalk Tire & Rubber Co., Norwalk, Conn., died at his home in Norwalk on January 25 at the age of 68. Mr. Arnold was one of the pioneers in the tire industry and helped develop the old Diamond Tire. He was associated with the Diamond Rubber Co., later merged with Goodrich, from 1897 to 1914. When Norwalk Tire was first organized, Mr. Arnold joined the company as general superintendent and subsequently was elected a vice-president and director. He retired from active business a few years ago, but retained his directorship until his death. During his work with Norwalk Tire, he achieved an excellent reputation for the manner in which he handled labor. A widow, two sons and two daughters survive.

Christopher G. Sinsabaugh

Christopher George "Chris" Sinsabaugh, editor of *Automotive News*, widely known in automotive and rubber circles, died of a heart ailment in Detroit on January 26. He was 71 years of age. Associated with the automotive field practically all of his working life, Mr. Sinsabaugh, at various times, edited *Motor Age, Motor, Motor Life* and the *American Motorist*. In 1930 he began writing his column, "Sparks," in *Automotive News*, and three years later was named editor of that journal. He leaves a widow and two daughters.

Robert J. Wilkie

Robert J. Wilkie, vice-president of Stowe-Woodward, Inc., Newton Upper Falls, Mass., died on February 1, at the age of 70, after a brief illness. Mr. Wilkie's entire business career had been devoted to the rubber industry and he was a recognized pioneer in the hard rubber field. He had been associated with Stowe-Woodward for the past thirty years. Funeral services were held from his home in Newton Centre on February 3, with interment in Newton Cemetery.

Arthur T. Hopkins

Arthur Thomas Hopkins, pioneer of the American rubber industry, died at his home in Weelfleet, Mass., last December, at the age of 74, as the result of a heart attack. At various times Mr. Hopkins was associated with the Boston Woven Hose & Rubber Co., Cambridge, Mass., as superintendent, with the Mechanical Rubber Co., Cleveland, a subsidiary of U. S. Rubber, as manager, and with the U. S. Rubber Co. itself, as manager of the footwear plants, with headquarters in New Haven. He was born in 1869 and was graduated from the Massachusetts Institute of Technology in 1897. Mr. Hopkins was a member of the American Society of Mechanical Engineers, Sons of the Revolution, and the Engineers Clubs of New York and Boston.

New Rubber-Like Materials

Two new rubber-like materials, both modified vinyl base compounds, have been introduced by the Industrial Synthetic Corp., Irvington, N. J., under the trade names of Insyn and Synflex. Insyn is supplied in the form of a coating compound and can be applied on fabrics, metal, leather and rubber composition materials, felt, etc., by spraying, roller coating, dipping, knife coating or calendering. The coating is said to be waterproof, acid, alkali, scuff and wear resistant. Synflex is stabilized, plasticized and colored in a variety of shades and fabricated by the company into a number of diverse cross-sectional shapes, tubes and rods. It is available in B & S wire gauges from #24 to 1½ inches, with wall thickness as desired. Its water absorption (after 24 hours) is not greater than .049% by weight, while its tensile strength is 3200-2500 lbs./sq. in. It will not support combustion and after 48 hours immersion at 105° C. in oil it remains smooth and intact. It also has reasonable resistance to chemicals.

Hold Graduation Exercises

Seventy-two Chicagoans who spent the previous 16 weeks studying synthetic rubber, received certificates of graduation at the Illinois Institute of Technology on February 4. Training for these 72, of whom 3 are women, was paid for by the Government, the synthetic rubber course given at the Institute being one of those offered under the auspices of the U. S. Office of Education's Engineering, Science, and Management War Training Program. All of the 72 are college graduates in chemistry or chemical engineering and are employed in industry. Dr. H. A. Winkelmann, technical director of the Dryden Rubber Co., who is in charge of the special course, which hears special lectures at almost every session given by outstanding rubber technologists, presided at the graduation exercises.

HITLER WANTS YOUR SCRAP TO REMAIN IDLE!

Hitler wants you to believe that scrap metal is no longer needed. He wants you to say — "I can't spare the time or men to clear this junk out." He wants to win the war!

And you're helping him to win it if you fail to round up your scrap and get it into the fight. You're dooming some brave American fighting men to die defenseless because a lack of scrap iron and steel deprived them of the weapons they need.

Don't rest on what you've done in the past. The experience of your fellow businessmen proves that you're *never* cleaned up in the first drive. There are thousands and thousands of tons of valuable scrap lying around in plants and shops of men who think they have already done the job.

Start now to carry on an organized scrap collection program. Apply the ruling given in the box to every idle piece of metal on the grounds. Form a Salvage Committee and select a high executive as Salvage Manager. Choose a man who has *authority*.

If some of the material you find is still usable, sell it as such to your scrap dealer, or a used machinery dealer; it will bring higher prices than the scrap. Write to this magazine for help with this problem, if necessary. Find a scrap dealer by looking in the classified telephone book — they are glad to get the kind of scrap you have to offer.

Above all . . . act now! The steel mills must have heavy scrap to mix with the light, household scrap collected last Fall. That is where the big shortage now lies. Do your part to keep our fighting men fighting . . . and winning!

WHAT IS DORMANT SCRAP?

Obsolete machinery, tools, equipment, dies, jigs, fixtures, etc., which are incapable of current or immediate future use in the war production effort because they are broken, worn out, irreparable, dismantled or in need of unavailable parts necessary to practical re-employment.

FOLLOW THIS RULE

If it hasn't been used for three months, and if someone can't prove that it's going to be used in the next three — sell it* — or scrap it!

*Scrap and used equipment dealers pay well for usable machinery and materials.

BUSINESS PRESS INDUSTRIAL SCRAP COMMITTEE

ROOM 3303, EMPIRE STATE BLDG., N. Y. C.

If you have done a successful salvage job at your plant, send details and pictures to this magazine.

SEND FOR PRIMER OF INDUSTRIAL SCRAP TO HELP YOU TACKLE THE SALVAGE PROBLEM

BUSINESS PRESS INDUSTRIAL SCRAP COMMITTEE
ROOM 3303, EMPIRE STATE BLDG., N. Y. C.

Please send a "Primer of Industrial Scrap" to

Your name_____

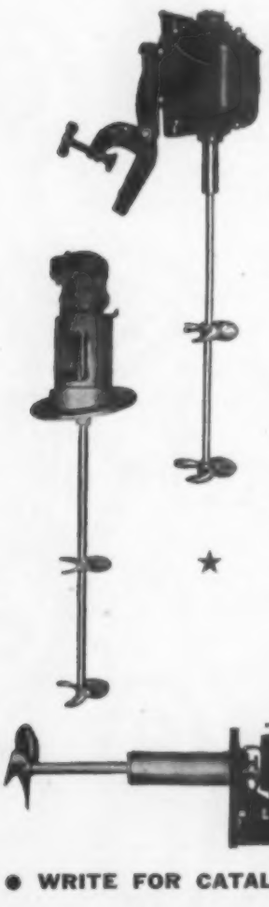
Company name_____

Company address_____

EASTERN MIXERS

FIT THE JOB AND STAND UP TO IT

Eastern mixing equipment is known all over the world for the sturdy dependability which wartime manufacturers in critical industries must have. Equally important is the proper fitting of the right equipment to the job. Eastern's line is complete. Eastern's engineers are mixing specialists. We invite the inquiry of manufacturers who have a problem of proper agitation, such as:

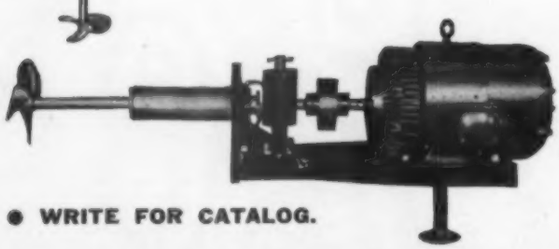


★ ***Manufacturers making products from natural or synthetic latex.***

★ ***Manufacturers making products from water dispersions of natural, synthetic rubber and reclaimed rubber.***

★ ***Manufacturers of artificial latices or water dispersions.***

★ ***Manufacturers using flammable materials in the production of rubber products and rubber cement.***



● **WRITE FOR CATALOG.**

EASTERN ENGINEERING COMPANY

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NEW EQUIPMENT

Dillon Model B Tensile Tester

The Model B Tensile Tester, a new and versatile portable tensile testing machine, has been introducd by W. C. Dillon & Co., Inc., 5410 West Harrison St., Chicago, Ill. Although only 32 inches high and weighing 83 pounds, the new tester will make all type stress

(and some compression) tests up to 10,000 pounds. There are seven available capacities, starting at 0 to 250 pounds.

This model, for the first time, brings to the "busting" engineer a small tester with many of the features of the larger and less handy models. This includes: large specimen space, pull exerted, fast operation, portability, extremely rugged, accurate, and direct reading dial, with max hand. This is accomplished by use of the Dillon "AN" Dynamometer, which today serves many branches of industry and the war departments.

Already the model has been selected by major war plants, to test metal coupons, parachute clips, aircraft parts, weld specimens, etc. The photo here shows separational pull test of an aircraft connector (Cannon Mfg .Co.). Standard grips are included for flat stock, and special grips can be had for rubber, paper, wire, etc., or for special shaped production pieces.

New Cramer Reset Timers

Two new synchronous motor driven timers, RS4 and RS5, both of the reset type, designed for time ranges up to five hours and longer if desired, have been made available by the R. W. Cramer Co., Inc., Centerbrook, Conn. These new timers have a wide application for accurately timing any electrical circuits, such as the automatic timing of machinery operations, chemical and food processing or heating processes.

These timers repeat their time cycle upon manual op-

eration of a built-in start button and they indicate at a glance, by means of a progress indicator which moves toward the zero mark of the scale when in operation, the expired and unexpired time cycle as well as the setting time.

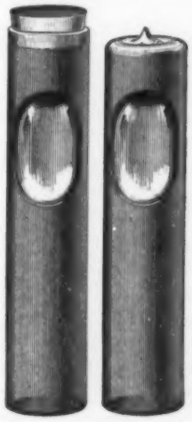
The RS4 timer has a double throw switch and opens or closes the circuit, depending upon the choice of circuit, and starts by pressing and then releasing the start button, which also resets the timer. The RS5 is different in that it is mechanically held in a neutral position when the button is depressed, and it starts the timing cycle by pulling the start button outwardly.

The new timers operate a single pole, double throw switch with a capacity of 10 amperes at 115 volts or 5 amperes at 220 volts A.C. non inductive load, and will control a one-third h.p. motor load, a heater load of up to 1200 watts, a lamp load of up to 250 watts or a relay load which does not exceed 15 amperes inrush at 115 volts A.C.

Young-McArdle Viscometer

The Young-McArdle Viscometer, a set of standards and matched tubes for testing the viscosity of highly viscous liquids by the air bubble method, originally designed for testing polymer solutions, but also serving to test viscosities of such products as rubber cements and solutions and synthetic elastomer solutions, has been introduced by R. P. Cargile, 118 Liberty St., New York City.

The new viscometer provides liquids of certified visvosity sealed in matched glass tubes, 4½-inch by 1-inch, with empty, matched tubes for the samples to be tested. Viscosity is determined by inverting the tubes and comparing the rise of an air bubble in the sample with the



rise of bubbles in the known standards. The air bubble in the heaviest standard requires about three minutes to rise. The procedure requires no special experience and is said to save much time over other methods.

Viscosities taken by the air bubble method have heretofore been designated in poises, units of absolute viscosity. The Young-McArdle series, however, is calibrated in stokes, units of kinematic viscosity, because this series is useful for testing a wide variety of products of varying densities. Absolute viscosity (in poises) is obtained by dividing kinematic values (in stokes) by the density of the sample.

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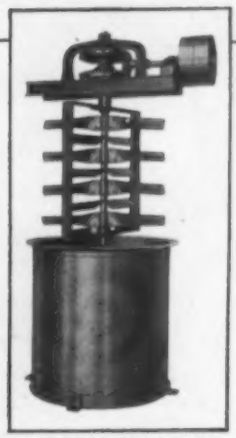

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Almost 100 leading suppliers have already ordered space in this edition — scheduled for publication in May.

For Rates and Full Details Write to

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250 West 57th St., N. Y. City

New Fuse-Bond Process

A revolutionary Fuse-Bond process ,and equipment for its application, whereby machine components and similar metal parts now may be prepared for metallizing electrically, has been announced by the Metallizing Engineering Co., Inc., Long Island City, N. Y. The main advantage of the process is that it affords an ade-

Metco Fuse-Bond Unit

quate bond on the hardest surfaces, heretofore impossible or impractical to prepare by blasting or rough threading. It also simplifies preparation of narrow edges, flat areas ,and cylindrical parts having keyways, and other interruptions in their surfaces.

Application of the process is with the Metco Fuse-Bond Unit. Operating on any 110 or 220 volt, single phase power line, this equipment fuses a rough deposit of electrode metal into the surface to be metallized. Electrodes are applied to the work with a special holder which uses up to six electrodes at a time, depending on the size and nature of the part to be prepared. Small parts may be prepared with this equipment as easily as large shafts, since there is no excessive heating of the base metal, or disturbing of its physical characteristics.

The Fuse-Bond Unit is extremely compact, and is contained in a cabinet measuring only 24" high. Weight complete is but 170 lbs. All cables and attachments fit into a bin in the top of the cabinet. Mounted on casters, it can be wheeled right to the job with ease.

The Octupus Jr., a new powerful **exhauster and blower,** has been developed by the Chelsea Fan & Blower Co., Inc., Irvington, N. J. It is powered by a ¾ h.p. motor, has newly developed heavy steel wheels, sucks or blows 2,000 c.f.m., operates in any position, and weighs only 70 pounds.

A new and improved universal quick-adjusting **cable splicing holder** that handles cable sizes from 1/16th-inch to 7/32-inch without the use of adaptors has been introduced by Patrick-McDermott & Co., Los Angeles, Calif. The thimble or bushing and cable are held in a firm position by using only two adjusting screws.

REVIEWS

BOOKS

Rogers' Manual of Industrial Chemistry. (6th Edition). Edited by C. C. Furnas. Published by D. Van Nostrand Co., 250 Fourth Ave., New York, N. Y. 6 x 9 in. 1685 pp. 501 ill. 2 vols. $17.00.

The essential facts, figures, methods and operations of practically every important chemical industry in America, compiled and contributed by experts in each field, are contained in this latest, revised, up-to-date edition. Fundamental knowledge needed in present-day chemical work, including economic factors, physical unit operations, and chemical unit processes, is furnished in the early chapters and is then applied specifically to each industry, including the rubber industry.

This sixth edition is divided into 8 sections, with 45 chapters in all. The sections are: Background of the Chemical Industry; Heavy Chemicals and Allied Products; Fuels and Their By-Products; Refractories and Allied Materials; Metallurgical Products; Surface Coatings; Products of Organic Synthesis; and Natural Organic Materials. The subject of synthetic plastics is treated with in the section on Products of Organic Synthesis, while that of rubber and rubber-like materials is handled in Natural Organic Materials.

The chapter on rubber was contributed by James W. Schade, former director of research, and Victor E. Wellman, manager of the general chemical laboratories, of the B. F. Goodrich Co. Dr. Schade retired from the company several months ago. Although written in condensed form, the subject is thoroughly covered from plantation industry to finished product. The authors treat with materials of the industry, processing methods, rubber products, and the chemistry of synthetic rubber. A recommended reading list for further study is given at the end of the chapter. Similar lists appear at the end of most of the chapters in the work.

This manual is of course one of the most complete encyclopedic reference works available on industrial chemistry, and merits a place on the library shelf of every laboratory. Like its predecessors, this latest edition is printed in clear, legible style and has a completely cross-referenced index.

•

Science in Progress. (Third Series). Edited by George A. Baitsell. Published by the Yale University Press, New Haven, Conn. 6 x 9¼ in. 322 pp. 112 ill. $3.00.

Three years ago it was decided to issue a series of annual publications based on the National Sigma Xi Lectures. Each annual volume contains important contributions from ten leaders in various scientific fields. This book is the third in the annual series published to date. In addition to contributions from authorities in the fields of astronomy, biology, physics, and medicine, it contains a chapter on "Some Scientific Aspects of the Synthetic Rubber Problem," by Hermann Mark, of the Polytechnic Institute of Brooklyn.

Professor Mark describes the molecular structure of high polymers, including polyethylene, polyvinyl alcohol, polyvinyl chloride, polyisobutylene, and polyvinyl acetate, and then discusses the association between some properties of these polymers and their structure. He uses the following as the main criteria for describing the structure of the polymers: (1) The average molecular weight or chain length; (2) The chain-length distribution curves; (3) The amount of branching or cross linking; and (4) The magnitude and geometrical distribution of the intermolecular forces. The influence of each of these factors on the mechanical behavior of the respective materials is discussed.

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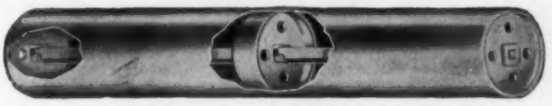

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Processing scrap rubber requires Stearns Magnetic pulleys or other types of magnetic separators. For economical, automatic, efficient protection against costly shutdowns due to tramp iron damage, Stearns Magnetic equipment will pay for itself many times over—a definitely profitable investment.

WRITE FOR BULLETIN 302

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REVIEWS (CONT'D)

How to Read Electrical Blueprints. By Gilbert M. Heine and Carl H. Dunlap. Published by the American Technical Society, Drexel Ave. at 58th St., Chicago, Ill. 5½ x 8¼ in. 318 pp. 301 ill. $3.00.

This is another in the "how-to-do-it" series of publications issued by the American Technical Society. As indicated by the title, this one treats with electrical blueprints, and is furnished with 9 full sized blueprints drawn to scale plus 204 questions and answers. Because the various branches of the electrical industry have adopted special symbols designed for the type of blueprint meeting the peculiar needs of each branch, the text has been written in sections to avoid confusion. For example, one section explains how to read blueprints for wiring buildings; another, diagrams of motors and generators; etc. For simplicity, pages of symbols have been prepared in which, opposite each symbol, is shown a picture of the object which the symbol represents. Although designed for self-study work and for use in vocational and trade schools, this book is also of value in national defense training classes.

•

Substitutes. By H. Bennett. Published by Chemical Publishing Co., Inc., 234 King St., Brooklyn, N. Y. 5½ x 8½ in. 225 pp. $4.00.

This is a specially-compiled handbook of substitutes and alternatives for chemicals, metals, fibers, and other commercial products, including rubber and rubber products, and offers a plan for making the proper choice. It is not complete or encyclopediac, since condensation rather than elaboration was the precept followed in assembling the information it contains. It is intended to offer a lead to the specialist or expert who can then interpret or interpolate a solution to his specific problem. The handbook contains a section devoted to a discussion of substitute requirements, with the balance devoted to a list of substitutes and alternatives, arranged alphabetically. Brand names are shown in quotes. A subject index is included.

BOOKLETS, CATALOGS, Etc.

Replacement of Thermatomic Carbons and Furnace Type Blacks in Rubber Compounds by Decreased Loadings of Channel Blacks and Mixtures of Channel Black and Whiting. By F. H. Amon and B. A. Wilkes. Godfrey L. Cabot, Inc., 77 Franklin St., Boston, Mass. 8½ x 11 in. 30 pp.

The fundamental viewpoint upon which the results of the work reported in this technical bulletin was based is that Buna S, unlike natural rubber, is not a satisfactory basic substance with which to build up rubber compounds by addition of the usual mineral fillers, but that Buna S plus a minimum loading (15 to 30 parts) of channel process carbon black is such a basically strong substance and can replace natural rubber. The work was undertaken in the belief that a workable substitute for the so-called thermal and semi-reinforcing blacks might soon be required, a belief which is rapidly becoming an actuality. The results indicate that the mixing and processing characteristics of the "soft" blacks can be duplicated by mixtures of channel process black and whiting and that the physical properties of the "soft" black-Buna S vulcanizates can be reproduced in some detail by such substitution.

•

How to Keep Rubber in Active Service. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, Canada. 3¾ x 6¾ in. 32 pp.

This is a well prepared booklet devoted to the conservation of rubber products, including belting and hose. The chief enemies of rubber are outlined, storage of manufactured articles, both new and used, is discussed, and a section devoted to methods of securing maximum mileage from tires is included. The booklet is profusely illustrated.

Organization and Training of Industrial Fire Brigades. By Captain John C. Klinck. Published by S. C. Toof & Co., 195 Madison Ave., Memphis, Tenn. 6 x 9 in. 119 pp. $1.00.

Prepared expressly for use by fire department officers who are confronted with the problem of organizing and training private fire brigades within industrial plants, storage warehouses and other large buildings, this book covers the subject extensively. It provides the instructor with a comprehensive illustrated outline which is of considerable help in forming and training such private brigades. Special attention is paid to plant personnel in fire training and inspection. The book is of interest to all large rubber factories faced with the hazard of fire and other destructive elements in the current emergency.

•

Cotton Counts Its Customers. By M. K. Horne, Jr., and Frank A. McCord. National Cotton Council of America, Memphis, Tenn. 8 x 10 in. 32 pp.

The result of a joint project of the Division of Research, National Cotton Council, and the Bureau of Business Research, School of Commerce and Business Administration, University of Mississippi, this booklet for the first time furnishes the answer to the basic question: How much cotton goes into each consumer use? The quantity of cotton consumed in final uses in the United States in 1937 and 1939 is given. The report indicates that in 1939 the automotive industry was cotton's biggest customer, 633,100 bales going into automobile tires.

•

Patents at Work. Office of the Alien Property Custodian, Washington, D. C. 8 x 10½ in. 25 pp.

Through the Office of the Alien Property Custodian, the United States Government now holds about 50,000 patents formerly owned by residents of enemy and enemy-occupied countries. These patents are offered for use by American industry. This pamphlet has been prepared to provide industry with a brief outline of the policies which have been adopted for the administration of these patent holdings. There is also included an index to the classified lists of vested patents for use as a guide in ordering specific sections.

•

Tygon—Geared to the Impossible. United States Stoneware Co., Akron, Ohio. 8½ x 11 in. 16 pp.

Some of the standard and newer uses of Tygon synthetic materials, which resemble rubber in many physical characteristics and yet are entirely different in chemical structure, are described and illustrated in this booklet. In addition to its original use as a corrosion-resisting lining material for tanks, pipes, etc., Tygon is now also used for insulating, tubing, fabric impregnation and glass coatings. Each of these uses is discussed.

•

An improved method, in which air pressure replaces weights, levers or other mechanical devices, to establish the nip or pressure of roll-type machines is described in *Pneumatic Loading of Industrial Machinery* (Bulletin B-306) issued by the Foxboro Co., Foxboro, Mass.

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Books . . . .

RUBBER RED BOOK—1941 Edition
Directory of the Rubber Industry
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ANNUAL BIBLIOGRAPHIES OF RUBBER LITERATURE
Compiled by D. E. Cable, Ph.D.
For 1935 (Paper binding only) $1.00
For 1936, Cloth binding $2.00
For 1937 (Paper binding only) $1.00
For 1938-39, Cloth binding $4.00

LATEX AND ITS INDUSTRIAL APPLICATIONS (Vol. I)
By Frederick Marchionna
Bibliography of latex patents and literature to June, 1932. Price: $15.00

LATEX AND RUBBER DERIVATIVES AND THEIR INDUSTRIAL APPLICATIONS (Vols. II & III)
By Frederick Marchionna
Bibliography of latex patents and literature from June, 1932 to January, 1937; rubber derivatives to January, 1937. Price: $20.00
(Combination Price, Vols. I, II and III: $30.00)

Published by
THE RUBBER AGE
250 West 57th St. New York City

MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, FEB. 13, 1943

Crude Rubber

ACCORDING to recent reports, brought to this country by neutral foreign traders, Japan is offering crude rubber at ¼ths of a cent to one cent per pound at Singapore, without much success. It is stated that German agents have been buying small quantities of rubber at these "bargain" prices in the fond hope that some method will be found to get the rubber through the efficient blockade.

Another very interesting report which has recently come to light is that some rubber from the Far East is beginning to make its appearance on the West Coast, brought there by Russian ships which are permitted to sail the Pacific insofar as Japan is concerned. It has long been known that Japan has been selling small quantities of crude rubber to Russia, presumably with the full knowledge of the United Nations, and it is now apparent that some of this rubber is appearing in this country.

In the meantime, every effort continues to be expended to increase shipments of wild rubber from Latin America. It is now predicted that Haiti alone will produce over 10,000 tons of rubber per year by 1944, a goodly portion of which is expected to come from the 100,000-acre cryptostegia plantation now under development. That a great deal of faith is placed in cryptostegia by officials of the U. S. Department of Agriculture is evident from the report that a plan to cultivate 50,000 acres of the plant has been broached to Mexico.

The Department of Commerce has issued its first official report on the plantings of *kok-saghyz* seeds received from Russia by airplane last summer. Over 18,000 pounds of roots from the experimental plantings, which were spread over 120 localities, have been harvested, and root production of 4,000 pounds or more per acre was obtained at a number of these localities. Average yield of rubber per root was about 4½%, as compared with 6 to 8% claimed by the Russians. An intensive program to determine the suitability of the *kok-saghyz* rubber for the manufacture of various products is now under way.

Prices shown below are those set by the Rubber Reserve Company:

Plantations—

Ribbed Smoked Sheets—			
No. 1 Spot	—	@	.22½
No. 2	—	@	.22¼
No. 3	—	@	.22
No. 4	—	@	—.21¾
Thin Latex Crepe	—	@	.23
Thick Latex Crepe	—	@	.23
Brown Crepe, No. 1	—	@	.21¾
Brown Crepe, No. 2	—	@	.21
Amber Crepe, No. 2	—	@	.21¾
Amber Crepe, No. 3	—	@	.21
Brown Crepe, Rolled	—	@	.17

Latex—

Normal, carload lots, tanks	—	@	.2595
Normal, carload lots, drums	—	@	.2825
Conc., carload lots, tanks	—	@	.2765
Conc., carload lots, drums	—	@	.2950

Guayule—

Ampar	—	@	.28

Paras—

Up-River, fine	—	@	—
Acre Bolivian, fine	—	@	—

Balata—

Surinam Sheet	—	@	.81
Prime Manaos Block	—	@	.71
Peruvian Prime	—	@	.70
Venezuelan Block	—	@	.73

Scrap Rubber

The flow of scrap to agents of the Rubber Reserve Co. is understood to be continuing at the same satisfactory rate as in recent months, with the non-usable tires turned in during the Idle Tire Purchase Plan finding their way rapidly into trade channels. It is reported that the Rubber Director is preparing another nation-wide scrap rubber campaign to be put into effect at any time the flow of scrap falls off considerably. This follow-up campaign was one of the recommendations made by the Baruch Committee. Prices shown below are those currently in use, although they do not correspond to the ceilings set in a recent amendment to Revised Price Schedule No. 87:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$18.00
Beadless passenger tires	ton	24.00
Mixed truck tires	ton	18.00
Beadless truck tires	ton	24.00
No. 1 passenger peelings	ton	47.50
No. 1 truck peelings	ton	47.50
Gray carcass	ton	47.50
No. 2 passenger tubes	lb.	.07¾
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06¾
Mixed passenger tubes	lb.	.06¾
No. 2 truck tubes	lb.	.07½
Red truck tubes	lb.	.07¾
Black truck tubes	lb.	.05¾
Buffings	ton	35.00
Bicycle tires	ton	15.00
Air bags and water bags	ton	15.00
Boots and shoes	ton	33.00
Black mechanical scrap, above 1.10	ton	20.00

Tire Fabrics

The situation in the tire fabric field remains unchanged, with practically no demand for such fabrics. Consequently, prices are nominal and in many quarters are not even being quoted. The prices shown below are those which were in force on or about January 15, 1942.

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb.	.43½ @	.44
Peeler, carded, 23/4/3	lb.	.44½ @	.45
Peeler, carded, 15/3/3	lb.	.41½ @	.42
Peeler, carded, 15/4/2	lb.	.41½ @	.42
Peeler, carded, 13/3/3	lb.	.40½ @	.41
CHAFERS			
Carded, American, 1 1/16"	lb.	.43½ @	.44
Carded, American, 1"	lb.	.39½ @	.48

Sheetings

48x40	36 in.	5.50	lb.	—	@ 7.818
40x40	36 in.	6.15	lb.	—	@ 6.991
40x36	36 in.	6.50	lb.	—	@ 6.615
48x48	40 in.	2.50	lb.	—	@16.200
48x48	40 in.	2.85	lb.	—	@14.210
56x60	40 in.	3.60	lb.	—	@11.944
48x44	40 in.	3.75	lb.	—	@11.066

Note: Prices shown above are ceiling prices set by order of the O.P.A. Quotations are based on an average price of 15-16-inch middling cotton of 20.37c at the ten designated southern markets.

Cotton

The price of middling uplands on the Cotton Exchange has swung in the very narrow range of 25 points, since our last report. High for the period was 21.51, quoted on January 22 and again on January 25; low was 21.26, reached on January 19. The average price of middling uplands for the month of January was 21.34, based on 25 trading days. The market was firm in mid-January, largely due to an accumulation of price fixing orders brought about by Government awards on over 200,000 bales of spot cotton for lend-lease purposes. With the lend-lease operations out of the way the market settled down to watch Washington developments, especially the program of the farm bloc. The price held fairly steady, see-sawing up and down a few points, despite Secretary of Agriculture Wickard's request that cotton farmers plant as much of their 1943 farm cotton allotments as possible. According to correspondents of the *Journal of Commerce*, cotton growers in the United States intend to plant 22,678,000 acres to cotton this season, approximately 2.7% less than the acreage in cultivation on July 1, 1942. Quotations for middling uplands on the Exchange follow:

	Jan. 14	February 13		
	Close	High	Low	Close
March	19.60	19.78	19.74	19.77
July	19.39	19.36	19.30	19.31
October	19.30	19.23	19.16	19.17

Reclaimed Rubber

Reclaimers report continued heavy demand. They are still able to maintain a good balance between supply and demand, but manpower troubles are becoming evident and may soon present a serious problem as to the ability of the reclaimers to continue present production rates. It is known that the Rubber Director is leaning toward reclaim as the material necessary to fill the gap if the production of synthetic rubber does not meet expectations by next Fall and reclaimers are preparing for such an emergency. Here, again, the manpower problem will rear its head and reclaimers are already urging the Government to action. Prices shown below are ceilings on typical grades of reclaim:

Shoe

Unwashed	lb.	.07 @	.07¼

Tube

Black Tube	lb.	.11¼ @	.11½
Red Tube	lb.	.12 @	.12¼

Tires

Black (acid process)	lb.	.07½ @	.07¾
Black, selected tires	lb	.06½ @	.06¾
Truck, Heavy Gravity	lb.	.08½ @	.08¾

Miscellaneous

Mechanical blends	lb.	.04½ @	.05½
White	lb.	.13 @	.13¼

Ducks

Enameling (single filling)	lb.	— @	.44¼
Belting and Hose	lb.	— @	.39
Single filling, A grade	lb.	— @	.19¾
Double filling, A grade	lb.	— @	.20¾

CHEMICAL MARKETS

New York, Feb. 13, 1943
All Prices F.O.B. Works

ACCELERATORS

Organic			
A-1 (Thiocarbanilid)	lb.	.28 @	.33
A-10	lb.	.36 @	.42
A-11	lb.	.52 @	.65
A-19	lb.	.52 @	.65
A-32	lb.	.60 @	.70
A-77	lb.	.42 @	.55
A-100	lb.	.42 @	.55
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	.43 @	.45
Beutene	lb.	.59 @	.64
B-J-F	lb.	.38 @	.43
Butyl Zimate	lb.	— @	1.13
Captax	lb.	.38 @	.40
Crylene	lb.	.40 @	.47
Di-Ortho-Tolyguanidine	lb.	.44 @	.46
Diphenylguanidine	lb.	.35 @	.36
El-Sixty	lb.	.40 @	.47
Ethyl Zimate	lb.	— @	1.13
Ethylidine aniline	lb.	.42 @	.43
Formaldehyde aniline	lb.	.31 @	—
Guantal	lb.	.40 @	.50
Hepteen	lb.	.34 @	.39
Hexamethylenetetramine	lb.	.33 @	—
Lead Oleate, No. 999	lb.	.13 @	—
Witco	lb.	.15 @	—
Ledate	lb.	— @	1.48
Methyl Tuads	lb.	— @	1.53
Methyl Zimate	lb.	— @	1.23
Monex	lb.	— @	1.53
Pentex	lb.	.74 @	.84
Phenex	lb.	.50 @	.55
Pip-Pip	lb.	— @	1.65
R & R 50-D	lb.	.42 @	.43
R-2	lb.	1.40 @	1.80
R-2 Crystals	lb.	1.55 @	1.70
Rotax	lb.	.48 @	.50
Safex	lb.	1.15 @	1.25
Selenac	lb.	— @	1.25
SPDX	lb.	.70 @	.75
Super-Sulfur No. 2	lb.	.13 @	.15
Thiocarbanilid, drums	lb.	.28 @	.33
Thiurad	lb.	— @	1.55
Trimene	lb.	.54 @	.64
base	lb.	1.03 @	1.18
Triphenylguanidine	lb.	.45 @	—
Ulto	lb.	1.25 @	1.75
Ureka	lb.	.50 @	.75
Blend B	lb.	.50 @	.57
Blend C	lb.	.48 @	.55
Vulcanex	lb.	.42 @	.43
Vulcanol	lb.	.85 @	—
Inorganic			
Litharge, domestic	lb.	.07 @	.07½
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Next Column)			
Blues [b]			
Prussian	lb.	.36 @	—
Ultramarine	lb.	.17 @	.27
Browns [b]			
Mapico	lb.	.1135@	—
Umber, Turkey	lb.	.04¾ @	—
Greens [b]			
Chrome	lb.	— @	.25
Guignet's Green	lb.	.70 @	—
Reds			
Antimony			
crimson, 15/17	lb.	— @	—
sulfur, free	lb.	— @	—
Indian	lb.	.08¾@	—
Domestic (Maroon)	lb.	.11 @	—
Mapico	lb.	.096 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red	lb.	.09¾ @	—
Whites [b]			
Cryptone No. 19	lb.	.0560@	.0585
Cryptone CB No. 21	lb.	.0560@	.0585
Cryptone ZS-800	lb.	.0825@	.0850
Lithopone:			
Albalith	lb.	.04¼ @	.04½
Astrolith	lb.	.04¼ @	.04½
Azolith	lb.	.04¼ @	.04½
Ray-cal	lb.	.05½ @	.05¾
Rayox	lb.	.14½ @	.15¼
Titanox A	lb.	.14½ @	.14¾
Titanox B	lb.	.05¾ @	.06
Titanox C	lb.	.05½ @	.05¾
Zinc Oxide—American Process [b]			
American Azo:			
ZZZ (lead free)	lb.	.07¼ @	.07½
Anaconda, lead free	lb.	.07¼ @	.07½
Horsehead Lead Free Brand:			
Special—3	lb.	.07¼ @	.07½
XX Red—4	lb.	.07¼ @	.07½
XX Red—72	lb.	.07¼ @	.07½
XX Red—103	lb.	.07¼ @	.07½
Kadox, black label—15	lb.	.07¼ @	.07½
Red label—17	lb.	.07¼ @	.07½
St. Joe, black label	lb.	.07¼ @	.07½
green label	lb.	.07¼ @	.07½
red label	lb.	.07¼ @	.07½
U. S. P.—7, bbls.	lb.	.10½ @	.10¾
Zinc Oxide—French Process: [b]			
Florence White Seal—7 bbl.	lb.	.09½ @	.09¾
Green seal—8	lb.	.09 @	.09¼
Red seal—9	lb.	.08¾ @	.08¾
Yellows [b]			
Cadmolith	lb.	.55 @	.60
Chrome	lb.	— @	.50
Mapico	lb.	.071 @	—

BLACKS
(In bags, carload lots)

Aerfloted Arrow		.0355@	—
Certified		.0355@	—
Certified Spheron		.0355@	—
Channel "S"		.12 @	—
Continental		.0355@	—
Disperso		.0355@	—
Dixiedensed		.0355@	—
Dixiedensed 66		.0355@	—
Excello		.0355@	—
Furnex		.03½ @	.06
Furnex Beads		.03½ @	.06
Gastex		.03½ @	.06
Kosmobile		.0355@	—
Kosmobile 66		.0355@	—
Kosmos-Dixie 20	lb.	.03½ @	.06
Micronex (Amarillo)		.0355@	—
Micronex Beads (Amarillo)		.0355@	—
Pelletex		.03½ @	.06
P-33		.0475@	—
Shell Carbon (Del. Midwest)		.025 @	—
Sterling		.035 @	—
Supreme		.0355@	—
Thermax		.0225@	—
Thermax "S"		.0675@	—
Wyex		.0355@	—

COMPOUNDING MATERIALS

Aluminum Flake	ton	18.00 @	24.50
99½%-300	ton	— @	16.50
86-90%-300	ton	— @	13.50
Asbestine	ton	16.50 @	20.00
Barium carbonate (98-100%)	ton	47.00 @	49.00
Barytes	ton	25.35 @	36.00
Bentonite	ton	11.00 @	16.00
Blanc fixe, dry	ton	60.00 @	67.50
Calcene	ton	37.50 @	43.00
Catalpo (fact)	lb.	.02 @	—
Chalk, precipitated			
Suprex white	ton	32.50 @	45.00
Clay, Aerfloted, Suprex	ton	10.00 @	22.50
Aerfloted Paragon	ton	10.00 @	22.50
Crown (f.o.b. plant)	ton	11.00 @	—
Dixie	ton	— @	10.00
Langford	ton	— @	8.50
McNamee	ton	— @	10.00
Par	ton	— @	10.00
Witco	ton	10.00 @	—
Cotton Flock (Dark)	lb.	.10½ @	.13
Kalite No. 1	ton	— @	26.00
Kalite No. 3	ton	— @	36.00
Kalvan	ton	— @	100.00
Kalvan "S"	lb.	— @	.09½
Magnesium carbonat	lb.	.06¾ @	—
Mica	ton	35.00 @	44.00
Mineralite	ton	— @	30.00
Pyrax A	ton	— @	7.50
Rottenstone (powd. Dom.)	ton	25.50 @	37.50
Rubberol	lb.	— @	.17½
Silene (calcium silicate)	lb.	.04 @	.045
Starch, powdered	cwt.	2.90 @	4.10
Talc, domestic	ton	17.00 @	25.00
Whiting, commercial	ton	16.00 @	26.00
Columbia Filler	ton	9.00 @	14.00
Witco	ton	6.00 @	—
Wood Flour (100 mesh)	ton	30.00 @	32.00

MINERAL RUBBER

285°-300° Mineral Rubber	ton	25.00 @	—
Black Diamond	ton	25.00 @	—
Hard Hydrocarbon	ton	25.00 @	27.00
MilliMar	lb.	— @	.05½
Parmr, solid	ton	— @	—
Pioneer, MR, solid	ton	— @	—

MISCELLANEOUS

Aromatics—Rodo #0	lb.	4.00 @	4.50
Rodo #10	lb.	5.00 @	5.50
Curodex 19	lb.	2.75 @	—
Curodex 188	lb.	3.50 @	—
Curodex 198	lb.	4.50 @	—
Para-Dors	lb.	4.50 @	—
Aresklene No. 375	lb.	.35 @	.50
Darvan (dispersing agent)	lb.	.30 @	.34
Santomerse S	lb.	.11 @	.25
Sponge Paste	lb.	— @	.18
Sunproof	lb.	.22¾ @	.27¾
Tackol (tackifier)	lb.	.085 @	.18
Tonox	lb.	.50 @	.59
Ty-Ply	gal.	6.75 @	8.00
Unicel (blowing agent)	lb.	.50 @	—

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	3.38 @	3.63
Nitric, 36 degrees	cwt.	5.00 @	—
Acids, Fatty			
Laurex	lb.	.14¾ @	.17¾
SL #10	lb.	.12 @	.14
Stearex Beads	lb.	.10 @	.11
Stearite	lb.	.10 @	—
Alkalies			
Caustic Soda, 76%	cwt.	2.70 @	5.70
Soda Ash, 58%	cwt.	1.15 @	2.98
Oils			
Cycline Oil	gal.	.14 @	.20
Degras, bbls.	lb.	.11 @	.12½
Para-Flux	gal.	.17 @	.18
Para-Lube	lb.	.046 @	.048
Petrolatum, amber [b]	lb.	.03¾ @	.04½
Pigmentaroil, tank cars	gal.	.20½ @	—
in drums	gal.	.26½ @	.27½
Pine, tanks	gal.	.55 @	—
Rosin Oil, cmpd.	gal.	.40 @	—
Rubberol	lb.	.13½ @	.14
Rubtack	lb.	.10 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	— @	—
Witco Softener No. 20	gal.	.20 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06 @	—
coal tar	ton	19.00 @	22.00
hardwood	ton	16.00 @	22.50
pine, 200 lb. gr. wt.	bbl.	— @	4.50
Pigmentar, tank cars	gal.	.20½ @	—
in drums	gal.	.26½ @	.27½
Retort Pine Tar, drums	gal.	.26½ @	.27½
Solvents			
Acetone, pure [a]	lb.	.07 @	—
Benzene, 90%, tank car	gal.	.14 @	—
Beta-Trichlorethane	gal.	— @	.20
Bondogen	lb.	.98 @	1.05
Carbon, bisulfide	lb.	.05 @	.08½
Carbon tetrachloride	gal.	.73 @	1.27
Dichlorethylene	lb.	— @	—
Dipentene, cml., drums	gal.	.48 @	.50
Ethylene dichloride	lb.	.07½ @	.08½
Plastogen	lb.	.07¾ @	.08
Reogen (drums)	lb.	.11½ @	.12
Rub-Sol	gal.	.09½ @	—
Trichlorethylene	lb.	.08 @	.09½
Turpentine, spirits	lb.	.78½ @	—
dest. dist., drums	gal.	.50 @	.55
Waxes			
Beeswax, white [b]	lb.	.61 @	—
Carnauba, yellow [b]	lb.	.87 @	.89
Ceresin, white, dom.	lb.	.13½ @	.15
Montan, crude	lb.	.45 @	.46
Paraffin [a]			
Yellow crude scale, 124/126	lb.	.04½ @	—
Refined, 123/125	lb.	.05¼ @	—

ANTI-OXIDANTS

Agerite Alba	lb.	1.95 @	2.05
Gel	lb.	.52 @	.54
Hipar	lb.	.61 @	.63
Powder	lb.	.43 @	.45
Resin	lb.	.43 @	.45
Resin D	lb.	.43 @	.45
White	lb.	1.23 @	1.33
Albasan	lb.	.69 @	.74
Antox	lb.	.54 @	.56
B-L-E	lb.	.43 @	.52
Flectol H	lb.	.52 @	.65
Flectol White	lb.	.90 @	1.15
Neozone A, B, C, D, E	lb.	.43 @	.63
Oxynone	lb.	.77 @	.90
Retardex	lb.	.45 @	.48
Santoflex B	lb.	.52 @	.65
Santovar A	lb.	1.15 @	1.40
S.C.R.	lb.	.33 @	.35
Stabilite	lb.	.52 @	.54
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.43 @	.52

EXTENDERS

Naftolen	lb.	.15 @	.25
Vanzak	gal.	.05 @	.06

LUBRICANTS—MOLD & RUBBER SURFACE

Aresklene	lb.	.35 @	.50
Cocoa Soapstock	lb.	.06 @	.08
Colite	gal.	.90 @	1.15
Dipex	lb.	.06 @	.08
Glycerized Liquid Lubricant	gal.	— @	1.35
Lubrex	lb.	.25 @	.30
Mineralite	ton	— @	30.00
Mold Paste	lb.	.12 @	.18
Sericite	ton	65.00 @	75.00
Soap Tree Bark, cut, sifted	lb.	.06 @	.08

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.25 @	—
Amberex Type B	lb.	.18¾ @	—
Black	lb.	.08½ @	.13
White	lb.	.09 @	.15
Brown	lb.	.10 @	.14
Neophax A	lb.	.16½ @	—

VULCANIZING INGREDIENTS

Dispersed Sulfur No. 2	lb.	.08 @	.12
Sulfur Chloride, yellow (drs.)	lb.	.03 @	.08
Sulfur, rubber makers			
Refined (bags)	cwt.	2.55 @	—
Commercial (bags)	cwt.	2.20 @	—
Telloy	lb.	1.75 @	—
Vandex	lb.	1.75 @	—

[a] Price Ceilings.
[b] Price Suggestions or Agreements.

The WHERE-TO-BUY Section of THE RUBBER AGE in which are listed the Products and Services of the Leading Suppliers to the Industry.

The Market Place

If what you are seeking is not listed here, write to the Service Department of THE RUBBER AGE, 250 West 57th St., New York, N. Y.

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- Good Aging Properties
- Free from Rapid Overcure
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- Low Dosages for Optimum Cures

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The world's standard gas black; universally known as the "King of Rubber Pigments."
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CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
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ACCELERATORS—
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MONSANTO CHEMICAL CO.
Rubber Service Dept.
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CONTINENTAL
The Newest Name in Carbon Black offers
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Accelerators—Sulphur
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79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

AERO BRAND
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DPG—DOTG—Accelerator 49
Rubber Sulphur
American Cyanamid & Chemical Corporation
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CARBON BLACK—Aerfloted
WYEX — TX — HX
Compressed — Compact (Dustless)
J. M. Huber, Inc.
460 West 34th St. New York

CHEMICALS

For Rubber		For Industry Generally
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

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Division of United States Rubber Co.
1230 SIXTH AVE. NEW YORK

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 40 years.*
The Aluminum Flake Co.
Akron, Ohio

CARBON BLACK
"Atlantic" Carbon Blacks meet the exacting standards of modern rubber production.
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Distributed by
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CHEMICALS
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Clairton Penna.

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"Alorco" Hydrated Aluminas reinforcing pigments give many desirable properties to rubber. Send for sample.
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Used throughout the world
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Ingredients—Whiting, Clay, Talc, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
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CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
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COLUMBIA CHEMICAL DIV.
Grant Bldg., Pittsburgh, Pa.

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The Market Place

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COLLOIDAL COLORS
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Offices in New York, Akron, Chicago

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The High Resilience Semi-Reinforcing Black
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PARA-DORS—
overcome odors in rubber—effectively and at low cost.
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BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
For All Cures
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Special Process Reinforcing BLACK. Superior aging and oil resistant properties. Low permanent set.
Herron Bros. & Meyer, Akron, Ohio
General Sales Agents for
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The Universal Softener—Adaptable, Uniform. Improves Quality—Economical.
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2510 First Central Tower
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COMPOUNDING Materials
Vulcanizing Agents
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Plasticizers
Dispersions
Pigments
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Mineral Rubber
Aromatics
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The special process reinforcing black in free-flowing form. Saves power; none wasted; protects adjacent colored stocks.
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A neutral gum for rubber compounding.
Samples and prices on request.
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Allied Chemical & Dye Corp.
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For outstanding compatibility in processing natural or modern synthetic rubbers, use
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DU PONT RUBBER COLORS
DU PONT ACCELERATORS
DU PONT ANTI-OXIDANTS
E. I. du Pont de Nemours & Co., Inc.
RUBBER CHEMICALS DIVISION
WILMINGTON, DELAWARE

MAGNESIUM OXIDE
Calcined Magnesium Oxide prepared for use in the compounding of neoprene. Full details on request.
J. T. Baker Chemical Co.
Phillipsburg New Jersey

RUBBER SUBSTITUTES
White, brown and black.
The Carter Bell Mfg. Co.
Springfield, New Jersey

EXTENDER
NAFTOLEN R 100 — Extender for Crude Rubber, Reclaim, Synthetics.
Wilmington Chemical Corporation
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